

The American Journal
Of The
Medical Science

1832



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THE
AMERICAN JOURNAL
OF THE
MEDICAL SCIENCES.

ART. I. *Case of Extirpation of the Parotid Gland.* By VALENTINE
MORT, M. D. &c. &c. [With two Plates.]

J. B. a native of St. Domingo, aged twenty-one years, came under my care in the latter part of June for a tumour situated on the face. He stated that he first observed it in January last, shortly after a severe attack of fever, and that it gradually increased in size until a few months ago, when he became alarmed at its progress, and decided on visiting this country.

Upon inspection I found a very hard tumour, about the size of an ordinary fist, involving nearly the whole left side of the face, and evidently formed of the parotid gland, apparently in a serious state. See Plate I. From its magnitude, and as the only chance left for the recovery of my patient, I resolved upon attempting its extirpation, and with his free consent, after rendering the subject perfectly intelligible to him, fixed on the 15th of July for carrying it into effect.

Accordingly, on that day the operation was performed. It was commenced by interrupting the circulation through the external carotid artery by ligature, and for that purpose an incision was made from the posterior angle of the lower jaw downward and inward about three inches in length, so as to expose to view the inner margin of the sterno-cleido mastoid muscle. An enlarged lymphatic gland was now exposed, lying directly upon the sheath of the vessels. Upon turning it to the inside, the external carotid was laid bare, and tied immediately below the digastric muscle, and a little above the upper border of the thyroid cartilage. From the tumefac-

tion of this part of the neck the artery was nearly three inches the surface.

An incision was next commenced above the jugum temporale and carried downward in a semicircular direction, until it terminated upon the os occipitis. The incision in the neck was now extended upward, to intersect the one over the tumour.

On detaching the integuments in the form of a double flap from over the diseased mass, its black appearance removed the impression of its scirrhus character, and fully demonstrated a melanotic condition of the gland. I however determined upon continuing the dissection, and proceeded to detach it from its various connexions. With this intention I commenced by dividing along the inner margin of the tumour the adipose and cellular tissue, until the inner edge of the masseter muscle was exposed to view. The finger was now introduced into the mouth, and cut upon in order to avoid dividing its membrane, and after separating the tumour for some distance from the masseter, to which it closely adhered, I detached it from the jugum, which had become more or less carious from pressure. It was next dissected from the mastoid and digastric muscles, and from the posterior angle of the jaw, but as the patient complained of excruciating torture when the tumour was raised from below upward, I determined to continue the dissection from above downward, and accordingly separated it, with a few rapid strokes of the knife, from the capsular ligament of the lower jaw, and removed the bulk of the disease, as represented in Plate II. fig. 1. The portion filling up the space between the styloid and mastoid processes was cautiously detached with the handle of a scalpel, and the fascial nerve or portia dura divided by a quick movement of the knife. At the instant of the division of this nerve, he seemed to evince more pain than at any period of the operation. The muscles of the left side of the face were paralyzed. All the remaining portions of the disease were, as far as practicable, removed.

Several arteries were tied during the extirpation of the tumour, and after its removal. The trunk of the temporal was cut as it emerged from the disease, and yielded a profuse retrograde hæmorrhage.

The operation lasted about an hour, and the patient lost perhaps a pint of blood. In the operation I was assisted by Drs. VACHÉ, WILKES, HOSACK, and DYHERS, and it was performed in the presence of Drs. BARLOW, A. SMITH, GRAHAM, and SEAMAN, and about twenty pupils.

After waiting a proper time, to see if any bleeding would occur, and refreshing our patient, although he did not seem exhausted, the

wound was closed by several sutures and adhesive straps, and lint, compress, and double-headed roller, completed the dressings.

Evening. Has had a little sleep and feels as well as he expected. No hæmorrhage; reaction has come on; took claret and water, with toast, which he sat up and eat with a relish, shortly after the operation.

14th, morning.—Left two pupils with him during the night, who report that he had slept well, and did not take the morphine that was directed, if he should be restless and in much pain. Pulse 94—skin natural. As he was averse to taking tea or barley-water, from the impression that it would occasion vomiting, he was allowed his favourite drink of weak claret and water.

Evening. Has had no evacuation from his bowels; directed the nurse to administer a common enema; pulse 104; skin pleasant; complains of considerable pain in swallowing.

15th, morning.—Enema operated favourably. Did not rest well during the night, but in the morning got some refreshing sleep. Skin a little heated, pulse 122.

Evening. Says he is more comfortable every way. Skin moist; pulse 108; recommended an enema.

16th, morning.—Has had a very undisturbed sleep, and feels better than at any time since the operation. Skin soft; pulse 96. Takes only sugar and water as a drink.

Evening. More comfortable than in the morning; has slept considerably during the day. Face more swelled; pulse 100; skin cool and soft; ordered an enema previous to bed-time.

17th, morning.—Passed a pretty good night; had a free perspiration. Pulse 98; skin natural.

Evening. Feels in all respects better; pulse more frequent than in the morning; skin the same.

18th. Swelling of the face rather diminished; does not complain of any pain in the wound, or in his head; pulse 95.

19th. Some discharge from the lower part of the wound. Dressed it; looks very well. Pulse 88. Ordered chicken water and an enema in the evening.

20th. Says he passed an excellent night, and feels much better. Pulse 96; skin natural; swelling of the face subsiding.

21st. Dressed the wound; discharge very good; pulse 88.

22d and 23d. Dressed the wound; seems improving in all respects.

24th. Removed all the plasters and dressed the entire wound; took away several of the sutures; very much healed by adhesion.

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Pulse and skin natural; bowels have been moved naturally. Directed more nourishment.

27th. Upon cleansing the wound, ligature from the carotid came away. Removed remaining ligatures and sutures; wound mostly healed; at a small unhealed point, opposite the lobe of the ear, the integuments appear to be taking on the melanotic aspect and a bloody fluid is discharged.

30th. Wound entirely healed, excepting at the point opposite the ear, which has every appearance of a reproduction of the disease. Complains of pain in the left knee, of which he has had several previous attacks. Directed leeches and warm fomentations.

August 5th.—Leeches have been repeated, followed by blisters. Pain in the knee less, but tumefaction increased; reünited portion of the wound taking on a melanoid fungous character; a small tumour making its appearance over the right eye-brow. Ordered syrup sarsaparilla; with a small quantity of mur. hydr. in solution.

12th. Several tumours have made their appearance upon the scalp; fungous of the wound rather increased; a dark spot showing itself in the integuments of the diseased side of the face; tumefaction of the knee increased; complains of pain in the right side. Skin assuming a yellow colour.

20th. Tumours all increased in size; hepatic affection very decided; confirmed hectic, and is evidently sinking. Every thing done to make him comfortable.

31st. In all respects worse. Permitted every thing he desires.

Sept. 5th.—Died this morning.

After death every exertion was made in order to obtain an examination of the body, but such were the feelings of the friends of the deceased, that even the desire of passing a lancet into one of the tumours on the scalp, with a view of ascertaining their positive character, although I had no doubt of the case being constitutional melanosis, was obstinately refused, and compelled to be abandoned.

On dividing the tumour longitudinally, not a vestige of the original organization of the gland could be observed. The inner surfaces had the appearance of firm tar, and imparted a black colour to the fingers when touched. See Plate II. fig. 2.

25, Park Place, New York.

ART. II. *Extracts from the Case book of THOMAS WELLS, M. D. of Columbia, S. C.*

CASE I. *Dislocation of the Astragalus and subsequent extraction of that bone—foot preserved.*—Dr. G. W. S. aged thirty years, of an active constitution and sanguineo-nervous temperament, was attacked with fever while travelling in Georgia, in 1819, and confined to his chamber for several weeks. In the early part of his convalescence, he was taking a short ride in an open carriage, when his horses became frightened and run. In attempting imprudently to extricate himself by leaping from the vehicle, he struck upon his left foot and dislocated the os astragalus from its junction with the scaphoides, upwards and slightly outwards.

Several medical gentlemen of the vicinity were called to his assistance, who made violent efforts to reduce the bone, but without effect. This was followed by violent fever, swelling, inflammation in the joint, and ulceration of the soft part, so as to expose the head of the astragalus, which soon after became carious. This accident confined him to his room several months longer. He came to Columbia, a distance of one hundred and fifty miles, in July, six months after the injury of his ankle. He had but imperfectly recovered his general health; the ankle was considerably swollen, occasionally painful, and admitted of little or no motion; the foot turned inward and was partially excoriated; a circular ulcer about three-fourths of an inch in diameter, exposed the head of the astragalus in a carious state. He walked on crutches, and could bear very little weight on the lame foot. Towards the close of July, after having one day taken much more exercise in walking than usual, he was attacked with violent inflammation throughout the tarsus, accompanied with great swelling, excruciating pain in the part, and high fever.

Bleeding, general and local, and the most rigid antiphlogistic course was followed up for several days, notwithstanding an extensive supuration took place, and the matter was discharged by punctures with the lancet, on both sides of the joint.

The violence of the inflammatory symptoms now subsided, but were followed by hectic paroxysms in the evening, and night sweats. The stomach and bowels became much disordered; copious bilious discharges, both by stool and vomiting; a very free discharge of matter from the parts; from four to six ounces every twenty-four hours; and rapid emaciation.

On examination with the probe, it was ascertained that the astragalus had become carious at different points.

It was now a question whether the leg should be amputated, or the diseased bone be removed—one or the other was believed to be necessary to save life; and as there did not appear to be any other bone besides the astragalus affected, the latter was determined on, and done on the 18th of August, in the presence of several medical gentlemen.

An incision was made, commencing at the edge of the original ulcer, near the tendon of the common extensor of the toes, carried obliquely backward and downwards a little past the lower head of the fibula, and the bone was carefully detached from its connexions.

There was very little difficulty in the operation, no vessel divided requiring the ligature, consequently very little blood was lost. The astragalus extracted, left a frightful wound, the foot seeming to be nearly separated from the leg.

A hollow splint was adjusted to the inside of the foot and leg, so as to preserve the limb perfectly steady and in a proper position, the foot being kept at a right angle with the leg; simple dressings were applied to the wound, and an anodyne administered.

Aug. 19th.—Suffers very little pain; feels some slight spasmodic twitchings in the leg.

20th and 21st. Symptoms favourable. Discharge from the wound moderate. Bowels opened by an enema

22d. Complaints of pain in the course of the tendo-achillis; warm fomentations over the dressings.

23d. No pain. Dressings removed; copious purulent discharge.

24th. Gripping pains and looseness of the bowels; a draught with 40 gr. tr. opii.

25th. Rested pretty well the forepart of the night. This morning has fever and violent spasms of the stomach and bowels. Subm. hyd. gr. x. and anodyne fomentations to the abdomen, by which the symptoms were relieved.

26th. Slept some last night; has had several copious bilious dejections, still feels occasionally some spasmodic action in the stomach and bowels. Emollient injections to be repeated through the day, and fomentations to the abdomen. *Evening.* Complains of great soreness on pressure upon the epigastrium; a blistering plaster upon that region.

27th. Had two copious bilious dejections in the night. Stomach and bowels entirely relieved; free from fever; muscular strength greatly prostrated. An infusion of cinchona and porter.

28th. Says he feels much improved; wound is granulating, but the discharge excessive. Injected a weak solution of corrosive sublimate. An anodyne enema in the evening.

Sept. 1st.—Has a good appetite; appearance of the wound favourable; discharge moderate and healthy.

9th. Recovery rapid; sat up most of the day; read one hundred pages from an octavo volume.

10th. Had a few hours derangement of the bowels; after that, there was nothing occurred to interrupt his convalescence. At the end of September, the wound was healed, and the swelling of the parts had subsided.

Twelve months after the operation, this gentleman passed through this city; he walked without the least difficulty; the ankle perfectly sound. The leg was shortened about an inch, and the deficiency supplied by a thick heal upon the shoe.

CASE II. *Strangulated Inguinal Hernia.*—The following case was attended in company with Dr. HARRIS of this town. John Smith, labourer, aged twenty years, of lymphatic temperament, residing in Lexington, four miles distant from Columbia, was attacked on the 10th of March, 1821, with pain in the abdomen and vomiting. We saw him the next day. He was apparently labouring under a violent attack of bilious colic, with frequent paroxysms of griping pain around the umbilicus, extending into the epigastric region, and accompanied with considerable soreness on pressure. Heat of the surface moderate, pulse 110, contracted and hard. He stated that he had been subject to similar, but less violent attacks, once in a month or two, for several years, but had always been relieved before, in the course of the day, by a dose of castor oil, or salts. In this instance he had taken a dose of oil, which was soon after ejected from the stomach, and the symptoms thereby aggravated.

He was asked, with a special reference to hernia, if he felt any uneasiness in the lower part of the belly, if there was swelling or soreness in the groins, or if he had in his former attacks experienced any such inconvenience; to all which he answered in the negative, and with so much assurance, that we were satisfied without further examination, his statement being fully corroborated by his mother.

He was subjected to the common treatment for bilious colic, was bled freely and repeatedly; warm bath, cathartics, injections, a large epispastic upon the abdomen, and occasional anodynes to procure temporary ease, were had recourse to. All the symptoms continued to increase in violence. Had three or four turns of vomiting every twenty-four hours, which became stercoraceous on the fourth day. Had a temporary respite from pain after vomiting. Evening exacerbations of fever were now attended with delirium. The character of

the paroxysms of pain continued much the same as at first; a distressing sensation of twisting around the umbilicus.

March 18th.—The eight day of his illness, he complained of soreness and pain on the back part of the left thigh, and said he had felt something of this previously to the attack of colic.

On examination, we found a circumscribed hard swelling, just below the tuber ischii, deep-seated, not involving the subcutaneous cellular substance, and very sore to the touch.

While uncovered for this examination, we accidentally discovered, (for we were not thinking of such a thing,) a hernial tumour at the left inguinal ring, the size of a small nut, of the character of which there could be no doubt. His case at this period appeared almost hopeless, he was exceedingly prostrated, had a most ghastly aspect of countenance, was delirious, and during the intervals between the paroxysms of pain, inclined to stupor. We frankly acknowledged to his father that we had been mistaken in the case and that an operation, which at an earlier period might have afforded him a fair chance of recovery, would now be an almost hopeless resort, and that we must submit it to his decision. He said if there was even a possibility of its saving his son's life he wished it done. The hernial sac, which was about two lines in thickness, exceedingly dense, and intimately united with the neighbouring cellular substance, being laid open, a few drachms of dark coloured serum were discharged, and a small knuckle of intestine of a leaden colour exposed.

There was a general adhesion between the intestine and the sac, but apparently much weakened by incipient mortification, so that it was easily broken up by the finger, except a broad fibrous band, extending across the knuckle of intestine, for the division of which, it became necessary to use the knife. The stricture at the internal ring was easily divided, and the protruded part returned. Two or three motions of the bowels were procured during the first night after the operation.

No unfavourable symptom occurred until the night of the 22d of March, when he had an attack of diarrhoea, the discharges sometimes involuntary. This difficulty was however soon checked by fomentations and small doses of calomel and Dover's powder.

24th. Suppuration having taken place in the swelling on the back

* After his recovery, he was asked why he had not made the existence of this inguinal swelling known to us, when specially and repeatedly questioned about those parts. He said it had always been so, so far as he recollected, and he did not suppose there was any thing wrong about it.

of the thigh, it was lanced, and a large quantity of purulent matter discharged.

• 25th. Says he feels quite well, except a little uneasiness in the bowels; appetite good; has had no motion since the 23d; ordered a small dose of castor oil.

In the evening I was called in haste to see our patient, who was represented to be in great distress, and apparently dying. I saw him at 10 o'clock, found him in a state of raving delirium, great difficulty of breathing, permanent spasms of the abdominal muscles, which were drawn back nearly or quite in contact with the vertebral column. On inquiry, I found he had taken the oil at 12 o'clock, as directed, and about an hour after, his appetite being keen, he was allowed to eat the leg and thigh of an old fowl, boiled. Soon after this unfortunate meal, he complained of pain in the bowels, and in an hour or too after, was thrown into the state in which I found him. The oil had not operated, but did so soon after my arrival, by the aid of an enema. Warm fomentations were applied to the abdomen; a dose of Dover's powder, and a few drops of the ess. of menth. given. The symptoms gradually subsided, and he slept several hours in the course of the night.

26th. Appears pretty well; mind a little confused.

From this time there was nothing occurred to retard his recovery. After he left his bed, he was directed to wear a truss, but finding it inconvenient, he soon laid it aside. Not long after he left the state. I saw this young man again in 1828—he had enjoyed excellent health; no return of the hernia.

This case would not have been considered worthy of a public journal, but for two particulars, which it may not be amiss to impress upon the minds of the junior members of the profession. The little reliance to be placed upon the statements of patients in such cases, and the great importance of a careful examination, by the senses of sight and touch, in all cases of abdominal pain; and the fatal effects of improper diet, in a state of great irritability of the stomach and bowels. It may also teach us, that we should never abandon a patient labouring under strangulated hernia, without an operation, however desperate the symptoms may appear.

CASE III. *Dislocation of the Knee-Joint—Death.*—March 10th, 1825. Was called to see a man, aged about forty years, by trade a tailor, and an habitual drunkard—found him in a miserable hovel, with his right knee dislocated outwards and backwards. The whole limb immoderately swollen and œdematous. The skin about the

knee covered with phlyctænæ, and evidently in a gangrenous state. The inner condyle of the femur ready to burst through the skin. Great disturbance of all the functions, both mental and physical.

All that I could learn of this patient was that he had been in bad health for some time; while walking in the back yard two days before, he fell, called for assistance, and was brought into the house with his knee dislocated as above stated. He died on the second day after I saw him, and the limb was examined on the morning following. Mortification had advanced considerably; the limb was very offensive. The head of the tibia was situated as above stated. Patella was drawn outwards and downwards, and rested upon the external condyle of the femur. A thick scale of bone was fractured from the inner part of the inner condyle, and remained attached to the ligaments. The cavities of the body not examined.

CASE IV. *Inguinal Hernia—Hydrocele—Ossification of the Tunica Vaginalis, and Diseased Testis.*—Sam, a slave belonging to J. D. aged about sixty years, affected with a complication of disease for seven or eight years. His master stated that he had been subject to periodical attacks of fever, accompanied with severe pain in the lower part of the abdomen, extending along the spermatic cord to the testis on the left side once in three or four weeks, during which he appeared to suffer severely. These ill turns were relieved by abstinence and repeated doses of salts.

His general health was so much impaired that he had been scarcely able to take care of himself for several years. The hydrocele tumour was large, and of an irregular shape, distended at its upper part and contracted below, where the surface was uneven, and unyielding on pressure, with very much the appearance and feel of scirrhus testis, so much so indeed as to lead the medical gentlemen who were consulted in the case, as well as myself, to suppose the testis to be in that state. The hernial tumour was small, and never descended more than an inch and a half below the ring, where it met the hydrocele tumour. The contents of the hernial sac were easily returned—indeed they did not often come down. It was determined to remove the testis in this case, together with its membranous envelopes—to cut the cord near the ring, and also all that part of the hernial sac external to the ring.

The patient was subjected to a preparatory treatment for a few days until the abdominal secretions became healthy.

An incision was commenced a little above the external abdominal ring, and extended to the lower part of the scrotum; the hernial sac

and cord laid bare; the sac carefully opened to be sure it contained no important part, and then cut across just below the ring. The cord was divided a little lower down; the artery tied, and the hydrocele tumour quickly detached from its connexions.

The parts were brought into contact and confined as usual. A firm compress was then adjusted over the upper part of the incision, and the patient required to lie upon his back for five or six days with his hips a little elevated and his thighs semi-flexed. Adhesion by the first intention took place throughout the whole wound, except the openings for the ligatures. Not an unpleasant symptom supervened. His recovery was rapid. He wore a truss irregularly for two or three months; after that he took no precaution to guard against a return of the hernia.

From that time to the present he has had scarcely a day's indisposition; has been able to labour as much as men of his age usually are; no appearance of hernia.

On laying open the hydrocele sac, the hardness and irregularity of the lower part of the tumour were found to depend on ossific deposit in the thickened tunica vaginalis. The testis was atrophied and softened—about half its usual size.

The proceedings in this case may not quadrate exactly with the rules laid down in the books on surgery, and it may be asked if it is intended to recommend excision of the sac for the cure of hernia. *No* at all, but it is intended to recommend precisely the same treatment in a similar case, and in the same circumstances.

It is granted there was a mistake in regard to the exact state of the testicle, which might have been corrected by an incision into the tunica vaginalis before advancing further with the operation, and this would have been done had it been particularly important to preserve that organ in this instance, although it could not have changed the indication in regard to the hydrocele itself, as things finally turned out.

The hernia was small, the inguinal canal and ring but little dilated, and as the sac must be laid bare by the operation, it was thought expedient to excise it at the external ring, and attempt to close that opening by the adhesive inflammation which must necessarily follow. This course subjected the patient to little or no additional pain, and to *no additional risk*, that would have had a moment's consideration in the mind of a surgeon in following any indication in operative surgery. The result has at least proved the correctness of our reasoning in the present case.

CASE V. Tracheotomy for the Removal of a Foreign Body from the Trachea.—John B. Passmore, aged four years, September 16th, 1827, was eating a piece of water-mellon while playing and laughing with other children; one of the seeds passed into the trachea; he was threatened with immediate suffocation, and fell upon the floor. The difficulty of breathing gradually subsided, leaving him very much exhausted; he soon after fell asleep, and rested pretty well during the following night, with the exception of two or three short paroxysms of suffocative breathing, and was brought to Columbia the next day.

When I first saw him there was slight febrile excitement; the features a little disturbed and dark, indicative of imperfect respiration: otherwise he was quite easy. While I was sitting beside him, however, he made a slight effort to cough; his breathing became instantly difficult and convulsive, attended with frequent efforts to cough. This paroxysm continued for about half an hour, when his breathing became gradually free, leaving him in a state of languor, from which he recovered in the course of an hour, and the little fellow was again at play about the room. An operation was at once proposed, as each returning paroxysm seemed to threaten a fatal termination, but was rejected by the friends, who insisted upon something else being tried.

The child was carried back into the country, six miles from town; took several emetics, and made use of errhines to excite violent sneezing, in hopes that the offending substance might be ejected, but without effect. The paroxysms became more and more frequent, each leaving him in a state of greater prostration, until it became evident to the friends that he could not survive much longer. They brought him to Columbia again on the 22d Sept. and begged that whatever should be thought proper might be done for him. His breathing had now become permanently difficult and croupy, and the intervals between the convulsive paroxysms short; his face was livid, his pulse too frequent to be numbered and small. There was evidently considerable inflammation and thickening of the lining membrane of the larynx and glottis.

He was laid upon a common table, his shoulders a little elevated by a pillow, and his head inclining backwards, supported by an assistant. An assistant on each side steadied the extremities.

An incision was made along the median line from a little below the cricoid cartilage to the upper part of the sternum, exposing the trachea, which in this instance lay deeper than was anticipated, the adipose substance being thick and the neck somewhat swollen. •

A vein of considerable size was divided and bled profusely, which, after waiting a few moments, (and to have waited longer would have been at the risk of complete suffocation,) was secured by a ligature. The tracheal rings were then divided from below upwards, in the course of the first incision, to the extent of about three-fourths of an inch, and the parts held asunder by two slender instruments. The rush of bloody spray and air through this opening was tremendous; the seed was instantly ejected; it passed over the shoulder of one of the attendants and fell upon the floor three yards from the table. After a few minutes the respiration became tolerably free, the bleeding having subsided, the wound was closed by two stitches and adhesive straps. The dressings did not prevent the passage of air through the wound. The plasters were very soon loosened by a copious mucous discharge from the trachea. Small doses of an anodine solution of tart. antimonii were given every two hours for the first three days, by which the pulmonary irritation was allayed, and the bowels kept open. He was kept perfectly quiet and confined to mucilaginous drinks. On the fourth day the air ceased to pass by the wound, and the little fellow was inclined to play in his chamber. There was no further difficulty except a considerable degree of hoarseness, which did not disappear for several weeks. From that time to the present there has been no irregularity in his respiration.

Accidents of this sort are by no means of uncommon occurrence; several have come within my own knowledge, most of which have had a fatal termination. An operation is the only means of relief, that can be relied upon; and tracheotomy should be practised in preference to laryngotomy, and the opening should be made large enough to give free exit to the foreign body, which, if it be loose in the trachea or first divisions of the bronchia, will generally be carried in the current of air, during the first convulsive expirations, through the aperture made in the trachea. All the air to and from the lungs, or nearly all, now passes that way. If the foreign body, by its specific gravity, is not subject to the current of air, its expulsion may be favoured by position.

It becomes a question of importance to determine, what circumstances would call for tracheotomy, in the accident under consideration?

In answer to this question I would with diffidence reply, the operation should be had recourse to in all cases, and at any period of the case, when the foreign body to be removed is not yet fixed in the bronchia; and this may be determined by the paroxysms of convulsive breathing, alternated by intervals of comparative ease. The sooner

after the accident the operation is done, of course the greater the chance of success.

It would seem that these paroxysms depend upon the oscillations of the foreign body in the current of air, in its passage through the trachea, to and from the lungs, during inspiration and expiration, and which continues as long as respiration continues to be carried on by an unnatural action of the respiratory muscles.

A foreign substance slips through the glottis during inspiration and is carried to the lower part of the trachea; the irritation thus excited in the exquisitely sensitive lining membrane of the air passages, is instantly followed by convulsive action of the whole respiratory apparatus; the foreign substance is thrown back with great violence into the larynx, and is either expelled through the glottis or returns at the next inspiration accompanied with the most alarming symptoms of suffocation. Thus it continues to oscillate until expelled or the irritability of the parts and the muscular energy become exhausted, and respiration is feeble.

It then settles in the most dependant part and remains at rest for a time, leaving the sufferer prostrated and comparatively at ease. The energy of the system and irritability of the parts are often a longer or shorter period recruited; the foreign substance is again put in motion by a slight effort to cough, and the same train of circumstances is acted over again; and thus it continues to be until the offending cause is removed or life destroyed; or until the foreign body becomes permanently fixed in the bronchia. When the latter takes place the symptoms will be entirely changed; so much so as to leave great doubt, in a majority of cases, in the mind of the surgeon whether the substance be not expelled; at least, sufficient doubt to deter him from operating.

There may be pain in the upper part of the chest; cough and other symptoms of pulmonary irritation, and eventually disorganization and death; but no paroxysms of convulsive respiration.

Is it ever practicable to search with the forceps for a foreign body after it has become fixed in the bronchial ramifications? As a general rule it would seem not, and for the following reasons. No substance small enough to pass through the glottis would be likely to be stopped in the first, but would pass on to the subdivisions of the bronchia. and no surgeon, it is presumed, would think of grasping with his forceps in these tubes with an expectation of seizing it. If there be exceptions to this position they must depend on the shape of the body passed through the glottis. A pin, needle, or slender bone, might take a transverse position in the trachea, or a substance with sharp

angular projections, capable of penetrating the substance of this canal, might become fixed there, and be come at with the forceps, but these are not the things usually taken into the trachea in such cases. Again, the pathognomonic symptoms would seldom be sufficiently clear to warrant so serious an operation. If any instrument is used for loosening a body fixed in the bronchia, it should rather be a slender probe with a bulb at its extremity.

The above remarks have been designedly confined to cases where the foreign substance has passed through the glottis; where it is detained in that strait, unless the surgeon be on the spot and act promptly, there will be little opportunity for the exercise of his skill in operating.

CASE VI. *Temporary Obstruction of the Oesophagus.*—October 6th, 1827. Was called to see a child, aged two years, son of a Mrs. Cook, found him sleeping quietly, and apparently in good health, unless there might be some little appearance of anxiety in his countenance. His mother said that four hours before he was sucking a piece of beef-steak, too large for him to swallow, which he however attempted to do. It stuck in the upper part of the oesophagus, and threatened suffocation. A woman near him had the presence of mind to thrust her finger into his throat, and push the morsel down. This gave him immediate relief, and all was thought to be well. Soon after he attempted to swallow water—was attacked with spasms of the muscles about the throat, and was more or less convulsed throughout the whole muscular system until the water was ejected. A few swallows of milk were directed to be given him. He was very soon attacked with spasms as before—a gurgling noise was distinctly heard in the oesophagus, and the milk was returned. This attempt to swallow was followed by considerable pain for fifteen or twenty minutes along the tract of the oesophagus; it then subsided and left him at ease. As there did not appear to be any thing immediately alarming in the case, I directed the mother to give him a piece of sponge-cake, milk, &c. occasionally, in hopes that by repeated efforts to swallow, the obstruction might be removed. Saw him again in the evening, eight hours after the accident; he was feverish and restless; the mother had made several trials with cake and milk, but it gave the little fellow so much pain that he at last utterly refused to attempt to swallow any thing. A common sponge probang was introduced into the stomach; the obstruction was found just above the cardiac valve, and was easily removed. He suffered very little from this operation. Repeated trials were now made to induce the little patient to swal-

low milk, but without effect, his previous attempts had given him so much pain: at last a few spoonfuls were poured into his throat, and the moment he found it no longer attended with pain, his appetite and thirst were voracious and insatiable.

The stimulus of the piece of meat lodged in the lower part of the œsophagus had caused speedy digestion and expulsion of the food from the stomach at the time, and subsequently a state of excitation in the gastric mucous membrane, not yet amounting to disease, but which called strongly for food to allay it.

The next day the little boy was quite well.

CASE VII. *Extensive Division of the Soft Palate.*—A lad, aged five years, nephew of Messrs. L. and E., Nov. 1st, 1827, was running with one end of a piece of reed-cane, a foot long and about an inch in diameter, cut square across at the extremities, in his mouth. He fell forward; the end of the cane coming in contact with the ground, it was thrust violently into his throat. I saw him very soon after the accident happened; there were too lacerated incisions, extending from the centre of the back part of the bony arch of the mouth, backwards and outwards on each side something more than an inch, and terminating within less than half an inch of the inferior margin of the velum palati. The soft parts were cut or torn through, making a triangular flap, the apex of which had fallen forwards and downwards, and hung dangling upon the root of the tongue, leaving the posterior nares and pharynx fully exposed. There was considerable hæmorrhage, and the child and friends were exceedingly alarmed.

A short, common surgeon's needle was heated in the flame of a lamp, bent to a proper curve, armed with a ligature, and confined in Dr. PRYSE's forceps for taking up deep-seated arteries. The patient was placed upon a table, and held by assistants. The mouth was kept open by a large cork placed between the back teeth, and his tongue depressed with a spatula.

The needle was passed through the apex of the flap, and then through a corresponding portion of the mucous membrane and cellular substance on the roof of the mouth, and the ligature tied by the common stems, for such operations where the fingers have not access.

It was not attempted to insert more than one suture, although this did not bring the parts into exact contact, but the swelling which supervened in the course of a few hours, as was anticipated, fully obviated that difficulty.

He was kept as quiet as possible—not allowed to swallow any thing for the first four days except a little milk and toast-water, and these as seldom as practicable. At the end of this period adhesion was found to have taken place at every point. There is not the slightest deformity of the parts remaining.

There was considerable difficulty in this little operation from the struggles of the patient and the contracted space left for us to act in—the mouth being already pretty well occupied by the apparatus for keeping it open and depressing the tongue; indeed, without the above instruments, or others equivalent, it would have been found impracticable either to pass the ligature or to tie it.

CASE VIII. *A deep-seated Tumour under the angle of the Jaw, complicated with Bronchocele—Operation—Superior Thyroidal Artery Tied, &c.*—Miss A. aged thirty-two years, lymphatic temperament, and scrofulous habit; afflicted with bronchocele of moderate size for fifteen years, both lobes of the thyroid enlarged; subject to fatigue of body, and anxiety of mind, but regular in all her habits, discovered about the first of July 1827, a swelling under the angle of the jaw on the left side. At first this tumour occasioned no inconvenience beyond mental uneasiness at its rapid growth; towards the close of September, however, it had increased so as very considerably to impede respiration. At the time of my being consulted, 1st of Dec. 1827, it extended from the lobe of the ear downwards, four inches, and forwards to the larynx; the back part lay under the sterno-mastoid muscle, and the lower part had insinuated itself under the upper margin of the enlarged thyroid gland. The tumour projected externally, considerably beyond the level of the jaw; inclined the head to the opposite side; it was hard and unyielding on moderate pressure. At times, especially when under the influence of a cold, she experienced acute pain in the tumour, and great difficulty of breathing, so much so, that she was willing to submit to any operation however painful, provided it might afford any chance of relief.

Dec. 7.—The system having been duly prepared during the preceding week, an incision was made from the lobe of the ear to the upper margin of the bronchocele, and the tumour carefully dissected out. The operation was exceedingly embarrassing owing to the limited extent of the external incision, and the deep situation of the tumour, the anterior portion of which extended under the larynx and upper part of the trachea, it was attached to the sheath of the carotid artery for some extent and to the styloid muscles. The superior thyroidal artery, enlarged to fully the ordinary size of the external ca-

rotid, was involved in the tumour and divided; it was, however, secured by the finger of a dexterous assistant pressing it against the cervical vertebræ; (the circulation being at the moment exceedingly languid,) held in that situation until the tumour was removed, and then without difficulty secured by ligature.

For forty-eight hours after the operation she experienced much embarrassment, both in respiration and deglutition, particularly on the second night, when her situation was for a few hours alarming. She could not speak above a whisper; inability to swallow and respiration exceedingly difficult.

These symptoms were promptly removed by a copious bleeding; opening the bowels; fomentations about the neck and a full anodyne draught. The next day the symptoms were favourable, and from that time her recovery was uninterrupted and rapid, under a common anti-phlogistic treatment. The wound was closed at the end of the second week and she returned soon after into the country. The bronchocele on the side operated on, had decreased very considerably before she left town, and continued to decrease until it was reduced to about one-half its original size; remained stationary for a time, and then began to fill up again; six or eight months after the operation I saw her, the bronchocele had regained its original dimensions. She has never since experienced any difficulty in her respiration, and has enjoyed her usual health.

The tumour consisted of a thick, dense, fibrous capsule, filled with a dark, dirty-coloured fluid. A free incision was made into it at an early part of the operation; its contents discharged, and thereby the remaining steps of the operation much facilitated.

NOTE.—Two years previously to the appearance of the above tumour, Miss A. had made a thorough trial of the iodine, for the bronchocele, but without any very marked effects.

CASE IX. *Chronic Affection of the Schneiderian Membrane and Obstruction of the Nares.*—Mr. V. aged thirty-eight years, slender frame, lymphatic temperament, called on me in May, 1829, on account of an obstruction in the nasal passages, under which he had been labouring three or four months, and which he supposed to have been occasioned by a bad cold contracted some time before. He was unable to breathe through the nostrils, one of which was entirely closed, so as to admit even a probe with difficulty; could by an effort force a little air through the other.

The mucous membrane was in a state of chronic inflammation and thickened, the secretions from which were changed to a dirty, vaxy

character, and seemed to be deposited in laminæ, as is the case with the cutaneous secretions, in some scabby affections of that tissue.

The mucous membrane of the mouth was also in a morbid state. He suffered much at night, having to breathe altogether through the mouth; the parts soon became dry and painful; his sleep interrupted by frequent calls for water, a pitcher of which he kept constantly beside his bed.

His skin was dry and harsh, there was some derangement of the digestive organs; otherwise he was in tolerably good health, and able to attend to his occupation, that of a ferryman.

He took a blue pill every second night, and a glassful of an infusion of gentian, rhei, orange peel, and super carb. sodæ, three times a day for two weeks; and injected a saturated solution of chloride of lime into the nasal fossa, twice a day; applied a small quantity of almond oil to the lower part of the nares on going to bed. The local treatment was continued for about five weeks, when he found the difficulty entirely removed.

There has been no return of the complaint since.

CASE X. *Hypertrophy of the Tongue.*—A daughter of George Roberts, of Lexington, aged six years, was brought to Columbia for professional assistance in May, 1829, with an enormous enlargement of the tongue; otherwise she was in good health and a fine robust girl. The following are the dimensions and state of the tongue at the time: length as it remained at rest and hung down over the chin, from the superior incisors to its apex, two and a half inches; circumference just in front of the lips, six inches; breadth from one angle of the mouth to the other, a little more than two inches. It had undergone a very considerable change in structure, was much more dense than natural, and not subject to change in its dimensions by the action of its own muscles, or if at all, very slightly so; its motions otherwise were sufficiently free; upper surface smooth; inferior covered with the cicatrices of old ulcers, several of which, where the tongue rested upon the alveolar processes of the lower jaw, but imperfectly healed; colour darker than natural. Within the mouth the tongue had undergone no apparent change, except a moderate increase in width and thickness. She had formerly suffered much from inflammation and ulceration of the mucous membrane of the tongue, but this difficulty had been obviated for the last six or eight months by keeping the organ covered with cloth bags, which, becoming immediately saturated with the mucous secretions of the parts, afforded a complete protection from the external air. If these bags were omit-

ted for a few days, the surface became very sore and painful. The front teeth had been displaced from the lower jaw by the long-continued pressure of the tongue. The lower lip was folded downwards. The anterior portion of the superior maxillary bone had undergone a slight curve upwards, the inferior a much greater curve downwards, so that while the back teeth came in contact, the front were an inch asunder, or rather the space between the upper teeth and the corresponding alveolar processes below was something more than an inch. She managed to eat by placing the morsel of food between the back teeth with her finger; fluids were introduced into the mouth through a tube, such as the spout of a coffee-pot: could articulate with a good deal of distinctness.

We could obtain nothing very satisfactory of the history of this case from the father, by whom she was accompanied. Her mother had died during her early infancy, and she had been placed with her grandmother away from him—the parties not of the most intelligent class. It seemed, however, from the father's statement, that the difficulty commenced when she was about eighteen months of age, with an attack of what we suppose to have been common glossitis; the tongue became suddenly swollen, and protruded from the mouth—continued in that state for two or three weeks, when the swelling gradually subsided, and it was again brought within its proper limits. During the next two and a half years she had repeated attacks of a similar character; worse, and of a longer duration in cold weather. All that he could say of the constitutional symptoms at this period, was, that “when the tongue swelled the child cried a great deal, and was very sick, and the old lady was in the habit of dosing her frequently with salts.”

For the last year or two there seems to have been no particular change in the dimensions of the tongue, save a gradual increase corresponding with the general growth of the system.

Not considering it within the scope of medical science to bring the tongue back to its normal state, and being confirmed in this opinion by that of several of my medical friends, the removal of that part external to the mouth was proposed and acceded to, and would have been done by one stroke of the knife but for the refractory character of the patient and the timidity of the father. The following plan was resorted to, and is on the whole perhaps the best operation in such cases and with such patients, but in adults where the surgeon can have the convenient use of all his resources for controlling hæmorrhage, there can be no objection to free excision, the least painful mode of operating.

The child having been freely purged, and kept on a gruel diet for two or three days, a seton needle, half an inch broad, armed with a double ligature, was passed through the tongue from below upwards, cutting transversely; the ligatures were carried obliquely backward, and firmly tied on either side, so as to give to the remaining tongue a somewhat pointed appearance. The gush of blood on passing the needle through the tongue was very considerable, but almost instantly ceased on the ligatures being tied: twenty hours after the strangulated portion was removed by two strokes with a bistoury, from the centre outwards in the course of the ligatures, which was followed by a few feeble jets of blood from the lingual arteries, and a slight oozing from the substance of the tongue for a few minutes. There was considerable irritation and constitutional disturbance after the application of the ligatures, which required a small bleeding and an anodyne; these symptoms all disappeared soon after the final excision.

The dressings consisted simply in the application of a pledget of lint moistened with a saturated solution of chloride of lime, renewed three or four times in the twenty-four hours, and a handkerchief tied over the mouth to protect it from the air. On the fourth or fifth day the child was walking about in the open air, and appeared to suffer very little: at the close of the second week the wound was nearly healed, and she was taken back into the country, with a request that she might be brought to Columbia again in four or five weeks, which was accordingly done. On her return the wound was perfectly cicatrized, and the body of the tongue reduced to its natural dimensions. She had full command of her lips; and it was very evident that the jaws would soon be brought into their proper relation to each other by the natural action of the muscles. She could articulate with sufficient distinctness, and give all the letters of the alphabet their proper sounds.

Four months after this her father called on me, and said that his daughter had fully recovered—the jaws had lost their curvatures, all the teeth coming in contact. Mr. R. called on me again a few weeks since, and informed me that his daughter enjoyed good health—had felt no symptom of the old complaint in her tongue since her recovery from the operation.

NOTE.—There is some discrepancy between the above case and the interesting one of nearly the same character subsequently treated by Dr. T. HARRIS in the Pennsylvania Hospital at Philadelphia, and reported by him in Vol. VII. of this Journal, which is the only case of the kind, it is believed, on record in our American journals.

In his case the enlargement was permanent from the first attack—in the above, if my information was correct, for which I cannot vouch, it took on an intermittent character for the two or three first years; in other respects there seems to have been sufficient identity in the nature of the two cases, and in calling this case by a different name from that applied by that gentleman, I would beg leave to say, it is not from an affectation of singularity; it was thus entered upon my case-book, from the fact, that, as it was presented to me, there seemed to be simply an extension of the healthy organization of the parts—subject to modification from position and exposure, without organic degeneracy which “chronic intumescence” might imply.

Columbia, S. C. January 1, 1832.

ART. III. *Observations on the Use of the Malt Poultice.* By STEPHEN W. WILLIAMS, M. D. late Professor of Medical Jurisprudence in the Berkshire Medical Institution.

I am surprised that physicians have been so long in the neglect of the use of the malt and charcoal poultices in cases of foul, ill-conditioned, and sloughing ulcers, and even in ulcers which have assumed a gangrenous appearance, and which have in fact become mortified. It is now a number of years since the attention of the faculty was first directed to the use of these articles in these cases, and accounts of their good effects are to be found in most modern surgical works, and in the Pharmacopœias of the American and European hospitals. Yet I have too much reason to believe that their use has been too much neglected, and comparatively inert applications substituted in their stead. Some practitioners prefer the charcoal to the malt poultice. The former is unquestionably an invaluable application in cases of mortification, yet my observation has led me to prefer the latter. It certainly contains a greater proportion of *carbonic acid gas* than the carbonated poultice, and upon this principle its efficacy depends.

Since the cases occurred which I shall soon detail, great use has been made of those invaluable medicines, the chlorides of soda and lime, and of the pyroligneous acids, in such cases, and no man has a higher opinion of their utility than I have, yet there are many cases where poultices are necessary, in which the malt poultice must supersede their use. I prepare the malt poultice in the following manner:—Stir into good boiling beer as much ground and sifted malt as

will be sufficient to form it into a poultice of a proper consistence. Spread it thick upon cotton or linen cloth, and cover the surface of the poultice with about a table-spoonful of the best yeast, and lay the poultice thus prepared upon the ulcer. Spread the poultice much larger than the ulcer, and change it two or three times in the course of twenty-four hours. When barley-malt cannot be obtained, oat-meal will answer. The ulcer will be sweetened, and will discharge bland matter in twenty-four hours—yet it will be advisable to continue the use of the poultice three or four days.

I have seen several cases where the patients must inevitably have lost their lives had it not been for the timely application of this remedy. I select the following, from my note-book, from among the many I have seen.

CASE I.—A man was most severely wounded in the arm from the discharge of a musket. The whole charge, powder, shot, and wadding, entered the anterior part of the arm just above the bend of the elbow. It destroyed the humeral artery from the place where it entered nearly to the axilla, and the whole charge was lodged nearly as high up as the armpit. The muscles were dreadfully lacerated, and the whole of the biceps flexor cubiti was completely denuded, and as black as ink. The cubital nerve was separated from its attachment six or eight inches, but was not wounded. I made an incision with my scalpel nearly the whole length of the arm, and secured the humeral artery both above and below the wound. I cleansed the wound, and dressed it with cooling applications. At the first and second dressings, three and four days afterwards, the wound appeared as well as could be expected. On the third dressing it put on a very unfavourable appearance. Sphacelation had commenced, and the smell from it was very offensive. I put him upon the use of cort. peruv. and applied the malt poultice. Changed it twice or three times a day. At the dressing the next day the bad smell was removed, the matter discharged was of better appearance. In two or three days the wound looked healthy. In about a week sphacelation again commenced, and by a recurrence to the same remedies the wound was again restored to a healthy appearance. The patient ultimately recovered, and has a good arm. He has pulsation in the radial artery from anastomosis of the surrounding arteries. This case is reported at length in the *New England Journal of Medicine and Surgery*, for 1818 or 1819.

CASE II.—The subject of another case was an old gentleman, over

eighty years of age, whose limb I amputated above the knee, for compound fracture, in the spring of 1825. His constitution was feeble, and he was just recovering from a severe attack of pneumonia. The stump appeared well at the first and second dressings, (the period at which I remove my first dressing after amputation is usually the third or fourth day after the operation.) At the third or fourth dressing the stump put on a very unfavourable appearance. Sphacelation had commenced, and the smell was intolerable. The matter discharged was thin, gleety, and yellow. He was labouring under constitutional irritation. I put him upon the use of cinchona, and applied the malt poultice. In three days the wound put on a healthy appearance, all bad smell was removed, and in a day or two more the poultice was laid aside.

CASE III.—In the spring of 1827 I was called in consultation to operate, if thought necessary, upon a young lady at the factory at Gill, who had her forearm most extensively lacerated in a carding machine. All the flexor tendons were severely lacerated, and large pieces of flesh were left upon the edges of the wheel. Extensive portions of skin were torn off her arm, one piece six inches long, and three broad. The lower part of the radius was broken into a great many fragments, and the ulna was laid bare six inches in length, and the periosteum was removed. The question of amputation occurred with a great deal of force and propriety. Fearful as the wound appeared, and small as was the probability of saving the limb, I gave it as my opinion that an attempt should be made to save it without a resort to amputation. A bare majority of the counsel coincided with me, and the attempt was made. I removed numerous fragments of the lower part of the radius. Some part of the bone was ground fine as powder. I cleansed the wound as well as I could, and put it into as near apposition as possible. I did not attempt to bring the lips of the wound in contact, as that would have been impossible. I wrapped the arm in carded cotton, and applied splints over it, and thus completed the dressing. We left the patient with fearful forebodings.

Three days after met in consultation, and removed the dressings. The wound was in a horrid condition; it was sloughing rapidly. The ends of the muscles were blackened, and the wound was discharging an enormous quantity of horrid offensive pus. I was alarmed, and feared that mortification would immediately destroy her. I requested the physicians to desist from this mode of dressing, and go into another room and consult upon the case. I there stated to them my

belief, that the patient would inevitably die unless a different course was now pursued, and suggested, and warmly urged the necessity of immediately applying the malt poultice. I was overruled, and the old dressings were reappplied. I left the patient with a heavy heart, but was requested to visit her the next day. My father went with me. On examining the arm there was no appearance of amendment. Upon the whole, it was rather worse than it had been the day before. My father immediately recommended the malt poultice, and it was applied. In twenty-four hours the wound put on a more healthy appearance, and in a few days all danger was past. This terrible wound healed in the course of the summer and fall, and the patient was able to use her hand. I can truly say that this was the most horrible compound fracture I ever saw cured, but I think there would be risk in quoting it as a precedent in subsequent cases.

CASE IV.—In the summer of 1827 I was requested by Drs. GOODHUE and DICKINSON, of Hadley, to visit a patient of theirs, who, a day or two before, had been severely wounded in the ham by a plough. The gastrocnemii muscles were laid bare to a considerable extent. At the time I saw him the weather was extremely warm. The wound was discharging most offensive matter, which had the peculiar smell of mortification, and the lacerated muscles were black and sloughing. His pulse was rapid and feeble, and his skin hot and dry. He had been taking physic and antimonials, and he had been bled. They were applying the flaxseed poultice. I advised the use of cinchona and the malt poultice. They consented to try them. Two or three weeks after this I saw Dr. Dickinson at Northampton, who told me that the malt poultice had the desired effect, and the patient soon recovered.

CASE V.—On the 14th of January, 1828, S. N. of Greenfield, aged forty-five, had his foot horribly lacerated by a mill-stone falling upon it. Notwithstanding the foot was covered with a thick cowhide shoe, the flesh was torn from it from the outside of the heel to the ball of the great toe, so that the bones of the foot were exposed. The tarsal and metatarsal bones were naked, and some of the tarsal bones were so badly fractured that I was obliged to remove them. On the question of amputation we concluded, as in the case of the young lady at Gill, to attempt to save the foot without amputation. I accordingly removed the commuted fragments of bone, secured the blood-vessels, and united the wound as near as possible by six or

eight stitches and bandages, and directed to keep the wound wet with spirit and water. The dressings were removed on the third day. The wound was sloughing, and throwing off very offensive matter; had every appearance of commencing sphacelation; yellow vesications appeared about the edges; it was so offensive as to contaminate the room. There was constitutional irritation; pulse 120 in a minute, and feeble; countenance pale and ghastly, and continual twitching of the nerves and tendons; stomach very irritable, and slight delirium. We directed the use of musk and aqua ammonia. As there was no malt at hand, we used the oatmeal and charcoal poultice boiled in beer and covered with yeast. The next day there was but little amelioration of his symptoms. The wound was sloughing horribly, and the skin in the neighbourhood of it was covered with vesications filled with yellow serum. His case was considered critical indeed. In the course of the day we were so fortunate as to procure some barley malt, with which a poultice was prepared in the usual way, and applied to the wound. In twenty-four hours all danger from mortification was past. The wound was shortly filled with healthy granulations, and the patient ultimately recovered.

Such is but a small part of the evidence I have in favour of the malt poultice in mortification and foul sloughing ulcers. It is much to be hoped that it will come into more extensive use with the faculty.

Deerfield, Massachusetts, Sept. 1831.

ART. IV. *Case of Penetrating Wound of the Abdomen and Section of the Intestinal Canal, successfully treated upon the Plan of Ramdohr, with Remarks.* By ZINA PITCHER, M. D., U. S. Army.

MR. Nicholas Miller, a citizen of the Cherokee nation west of the Mississippi, was stabbed on the 29d of June, 1831, with a butcher's knife, by the hand of a white desperado. The instrument entered the abdomen just where the spermatic cord passes out through the left internal abdominal ring, passed upward and inward towards the median line, making an incision three inches in extent in the external teguments, and an opening still larger in the peritoneal sac, so that the shape of the wound, and the attitude in which it was received, the patient leaning forward at the time, permitted an immediate escape of several feet of his intestines with their extravasated contents, from the cavity of the abdomen.

On arriving at his house, which was within an hour after the injury had been inflicted, I found him lying on his back, with his shoulders elevated and his knees drawn upward to support the protruded bowels, while the hand of a friend kept them from falling over the side. His skin was covered with a cold and clammy exudation, his stomach heaved, and his heart and lungs laboured, and were oppressed. In this position his stomach had discharged its contents, which being mixed with the fecal effusions from the colon, and the blood from some wounded branches of the mesenteric artery, produced momentary confusion, and gave the wound a formidable and unpromising aspect.

On examining the protruded viscera, it was ascertained that the knife in passing across the abdomen had divided the ileum diagonally, and separated two inches of the lower portion from the mesentery. The fold of intestine in contact with this was cut on its convex side two-thirds across; two other convolutions were transpierced, and the left iliac colon was partially opened in the direction of its circular fibres.

The first step in our attempt to restore the displaced bowels, after giving ℥ii. tinct. opii, to relieve the patient from the sensation of sinking, was to secure the bleeding branches of the mesenteric artery, (three in number,) by single thread ligatures, the ends of which were cut close to the knots. My next object was to bring together the dissevered ends of the ileum. This I effected by passing a ligature through the upper portion from without inward, thence into the lower part and out again, including half an inch of intestine in the stitch, then returned it through the upper end from within outward, drew it close, and cut the ends short off. Three sutures of this kind made the intus-susception complete. The other openings were closed by continued sutures, (except that of the colon, for which a single stitch was sufficient,) the ends of which were left long, and so tied as to hang within the gut. Thus much accomplished, the intestines were sponged clean with warm milk and water, gradually and without impediment returned into the abdomen. Some pieces of the epiploon which had been injured by the knife were cut away, and the external wound closed by half a dozen turns of the continued suture. A slight hæmorrhage still continued from the external angle of the incision, which seemed to come from the spermatic sheath. I managed by position to conduct the blood out of the wound, applied a compress wet with spirit and water, and kept it in place by a modification of the T-bandage. After giving another dose of the anodyne, (℥i.) and directing to have it repeated hourly till the pain

should abate, I left Mr. Miller at 6 P. M. two hours after the receipt of the injury, in great pain, with a small, frequent pulse, and a cold and moist skin.

23d. Stomach rejected the opiate once, after which it was twice repeated, when he became easy, and before midnight was asleep. Now free from pain and inclined to dose. Put him upon a diet of connahanah,* and give him to drink cold water containing the mucilage of the *Ulmus alata*.

Evening. No pain or fever. Ordered the bowels opened by an enema, and one to be given at bed-time containing ℥i. tinct. opii.

24th. Had rigors at 8 o'clock this morning; the pulse is full and frequent, with heat of skin. I took ℥xv. of blood; bathed the abdomen with warm water; changed the dressings, and left him at 11 A. M. with a soft pulse and a moist skin. There is a little tumefaction about the wound. Ordered ℥i. nitric ether every hour in cold water; diet and drink continued.

Evening. Has perspired through the day; pulse full, but softer and slower than it was in the morning. The scrotum is blackened with extravasated blood. Continue nitric ether every two hours, and order an anodyne enema to be given if he should become restless in the night.

25th. Has slept well; eructations frequent; pulse 80 in a minute, increased in hardness, but a gentle moisture upon the face. Gave a saponaceous enema, but it returned without feces. Bathed the abdomen with warm water, and ordered it repeated frequently during the day. As he complains of gastric sinking, I allowed him to have small quantities of animal broth in place of his connahanah.

Evening. Feels better at stomach; skin hot; respiration hurried; pulse not so hard. Ordered an anodyne enema; cold drinks; and evaporating lotions to the abdomen.

26th. Rested well last night; has vomited some bile; nausea continues this morning; pulse soft, and skin cool. Directed a saline injection; continue gruel and iced water.

Evening. Vomited more bile after taking the enema, which looked as if mixed with feces; bowels moved twice; the attendants report a discharge of pus per anum. These motions have increased the irritation within the abdomen; there is now thirst, jactitation, hardness and frequency of pulse, but not much febrile heat. Gave ℥ii. tinct.

* Connahanah is a Cherokee dish, prepared from the Indian corn much after the same manner as the sowens of the Scotch is from the oat-meal. It is liquid, and agreeably acid.

opii per anu, and defer blood-letting till morning, with a view to ascertain whether this commotion depend upon an irritated or an actively inflamed state of the viscera. Diet, drinks, and local applications continued.

27th. Miller slept the after part of the night, and had slight perspiration. His skin is now cool; tongue clean and moist; respiration natural; pulse soft and frequent; urinary discharge copious. The eructations are frequent; food becomes acid, and is occasionally ejected from the stomach. Ordered an alkali to be taken with his food.

Evening. No bilious vomiting to-day; no pain; no fever; external wound suppurating; abdomen a little bloated. Has taken to-day a little squirrel water. Regimen continued.

28th. Had a good night's rest without an opiate; pulse frequent, but soft; skin cool; distention of bowels increased; move them by an enema; stool natural; wound suppurating. Treatment same.

Evening. Bowels still tense; strong pulsations in the carotids; pulse hard; respiration laborious; temperature a little augmented. As the inflammation about the external wound is not extending, I defer the bleeding once more, though the other appearances seem actually to call for it.

29th. He has slept well the greater part of the night, and was permitted to eat an egg for breakfast. His voice, which had become sepulchral from inanition, is stronger, and the expression of his countenance more animated. Skin warm; pulse strong and jerking, or vermicular, the carotids throb violently, and the abdomen is distended and tympanitic. He was bled from a large orifice till the artery at the wrist was diminished in volume and force. Regimen continued.

Evening. Bowels moved spontaneously several times to-day. Gave xl. min. tinct. opii.

30th. Slept well last night, and is easy to-day.

Evening. Diarrhœa returned after dinner; check it again with laudanum.

July 1st. Improving. Diet increased.

Evening. Distention of the abdomen has subsided.

2d. Still getting better. Had a discharge of pus and coagulated blood from the wound to-day.

4th. Wound discharging healthy pus. Quantity of food increased.

5th. Adhesion of the external wound is completed. No discharge of matter except at the openings made by the sutures. Remove the ligatures, and apply compression by means of adhesive straps.

6th. A small collection of matter formed from the cut edges of the abdominal muscles was discharged this morning through an aperture

caused by one of the stitches. Apply a wet compress, and renew the straps.

7th. Discharge diminished; the patient can sit up.

9th. No discharge; no stool to-day.

10th. Bowels still costive. R. \mathfrak{Z} ij. sulphur in treacle.

11th. Bowels regular; appetite good; external wound entirely healed, and Mr. Miller begins to walk out.

Dec. 24th, 1831.—Mr. Miller arrived at this station this morning, having been absent some time on a journey, which he performed on horseback: He rides with accustomed ease, but is obliged to wear a pad and belt, on account of liability to hernial protrusion.

Remarks.—In the adoption of measures to effect a restoration of function in the case detailed above, of divided intestine, I was not influenced by any predilection entertained for the plan pursued, but acted in accordance with an opinion formed at the time of its expediency, after a careful examination of the injured parts. Having put in practice the plan of invagination in preference to that of retaining the cut ends in apposition by interrupted sutures, as recommended by Mr. S. COOPER, (see *Surgical Dictionary*, Art. *Wounds*,) and so vehemently insisted upon by the ardent and accomplished Mr. JOHN BELL, in his *Treatise on Wounds*, it is my purpose at this time merely to give the reasons for doing so.

The free retraction of the lower portion of the gut, owing to the wound in the mesentery, and the dissection of the intestine therefrom, together with the full eversion of the villous coat, so accurately described by Mr. TRAVERS, (see *Treatise on Injuries of the Intestines*, page 85,) gave me reason to dread the consequences of effusion, and to apprehend failure if I should attempt to promote reünion by the introduction of two or three stitches only, as practised in the experimental cases of Sir A. COOPER and Drs. THOMSON and SMITH. In the adoption of either method, there is a serious impediment to the healing process presented in the nature of the organization of the parts necessarily brought into contact; in one case mucous coat meets mucous coat, and in the other there is the heterogeneous junction of a mucous with a serous tissue; so that complete success at last seems to depend upon the firmness and extent of collateral adhesions. If this observation be true, and we have authority to think it is so, it appears to me that the Ramdohrian method of treating lesions of this sort, presents to the practical man the fairest prospects of preserving the functional integrity of the alimentary canal, unless it can be shown that the danger of introversion in one case is paramount to the chances of extravasation in the other.

The nature of the accident compelled me to make another deviation from authorized usage. This was the insertion of the lower portion of the ileum into the upper. I did this because the lower end had been already, by the butcher's knife, freed from its connexion with the mesentery, in which I found the chief impediment to this mode of junction. The peristaltic contractions occasioned by handling the bowels, embarrassed the operation very considerably, but that difficulty was overcome by the manner of passing the ligatures already described. The risk, or rather fear of inversion of the part inserted, appears to me to be altogether chimerical, for the action of the longitudinal fibres tends constantly to produce an opposite result.

Should no other circumstance attendant upon the foregoing case render it worthy of record, the fortitude of Miller ought alone to do so, for the heroic firmness which he evinced amidst the pains of the operation, and with which he subsequently submitted to dietetic restrictions, were worthy of the cause of martyrdom.

Cantonment Gibson, Dec. 24th, 1831.

ART. V. *Report to the Trustees on the State of the Medical Department of the Baltimore Alms-house Infirmary, for the year ending the 30th of April, 1831.* By THOMAS H. WRIGHT, M. D. Physician to the Institution.

TO the annual report on the state of the medical department of the institution, together with a summary of diseases, and their results, for the year just expired, I respectfully beg leave to add some remarks suggested by the circumstances of the period comprehended in that report, and which remarks I hope the trustees will not deem out of place, or unsuited either to the nature and objects of my station in the house, or the duty I have just had occasion to perform.

In the summary of diseases and their results, herewith submitted to the trustees, they find an aggregate of two thousand five hundred cases treated; two thousand cured or relieved; two hundred and eighty-six died; and between two and three hundred remaining in hospitals. The aggregate of cases is drawn from a special register, kept by the senior student, designed to embrace all cases treated, whether brought from abroad or originating in the house. The monthly hospital returns, herewith annexed, made up of cases in hospital at the end of every month, give an aggregate of three thousand pa-

tients in the year. The number of cases reported as drawn from the special register kept for that purpose must be nearly accurate, and is free of one source of error, which applies to the summary given by the monthly returns, which is, that while some cases treated and discharged in the intervals of making out the monthly estimates, are necessarily omitted; many chronic cases long in hospital are repeatedly included in the number returned.

The mortality in the house for the year past is greater, proportionally, than for many years before; a circumstance which has been a source of deep regret, both to myself and to the excellent young gentlemen who acted as students of the institution, and my assistants. I wish respectfully to point the attention of the trustees for a moment to some of the causes and modes of death, which, while they greatly contributed to swell the list of victims, may, with strict justice, be considered as inevitable and uncontrollable, admitting neither prevention nor remedy by any kind or degree of human attention, exertion or skill. I do not present considerations of this nature to the notice of the trustees from any apprehended imputation of less faithful or efficient discharge of our medical duties during the past year than on former occasions, but because it is always intrinsically just, that events should be judged by the circumstances under which they occur. In medicine, as in other things, it may happen that our success is not equal to our efforts. I can with truth assure the trustees that my personal attendance on the institution was on no former occasion so great, and my vigilance over the sick of the house never before so little relaxed as during the past year. Of the zeal and coöperation of the class of students, I cannot speak in terms of praise beyond their merit. The conscientious regard to the duties of place and station which they constantly displayed, and the laudable union of professional responsibility, with private benevolence and charity, strongly evinced in their unremitting devotion, personal services, and anxious care for the sick and ill under their charge, exceeds, while it deserves the highest commendation I could pronounce. It is far from common to find in private medical practice, almost always distinguished by urbanity and kindness, more concern, tenderness, patience, and personal assistance, than I have often seen rendered by the pupils of the house to the sick poor, not alone to the more meritorious or unfortunate, but to all—to the unworthy or the vicious, nay, even to the ungrateful and the rude.

Of two hundred and eighty-six deaths reported, the following proportions were contributed, by accidents on the one hand, and on the other by a form of disease every where incurable, and generally the

more speedily running to its final and certain catastrophe, in proportion to the vigour of the attempts to interrupt its course, or avert its consummation. Under the head of accidents may be ranked nine cases, reported "dead or dying when admitted;" some of these lived a few hours, none exceeding the day and night of their admission. One case of this description was overlooked; there were ten in all.

Ten dead or dying when admitted.—Four still born.—Eighty-five confirmed phthisis when admitted.—Ninety-nine necessarily fatal.

On the difficulty of treating successfully the ordinary diseases of the tenants of our hospitals, such diseases as, although dangerous, are commonly curable in good constitutions, I need not insist to the trustees; they are aware that our patients are composed of the most unfavourable class of subjects for disease, and worse still, that in general they do not come to our charge until their state is deemed desperate; when, by previous duration or neglect, disease has done its work, and no after care can stay its triumph. The trustees know, that it is in constitutions subdued by time, by natural infirmities, and all the forms of inveterate disease, usually attendant on a life of intemperance and profligacy, we have often to contend with maladies sufficiently formidable to try severely the best bodily powers of resistance or repair. From the nature and objects of this institution I fear, its governors and friends must calculate upon a probable, gradual increase of the annual mortality in the house. In all establishments of this kind the comparative number of the old, the unhealthy, and the incurable, is like to augment somewhat in the ratio of time for which such foundations exist, and the increase or amount of loss by death in those classes, will have a general relation to the period for which such institutions have been in operation. As the community from which the tenants of those establishments are drawn advances in age, populousness, &c. the description of persons who seek a temporary or permanent asylum in alms-houses multiplies, both because the whole population augments, and not less, because numerous and serious diseases are the constant product and fruits of old and crowded societies.

One form of disease that contributed largely to the heavy loss which this year's summary exhibits, is in a great measure new to us, having never before, to my knowledge, appeared in the wards of the institution; or if at all, in a few solitary cases, of common character and easily corrected. In one part of the past year the disease in question took possession, if I may so speak, of some of our hospitals, and rapidly carried off a majority of all it assailed. I allude to a species of spontaneous gangrene, which seized upon the subjects of

wounds or ulcers in our wards, and in a few days, often in a few hours, destroyed entire limbs comparatively sound and well just before. Few even among the most robust of our patients were able to cope with the withering power of this new adversary; and with the infirm or diseased, nothing arrested its progress toward destruction for one moment. It was too often in vain that the pupils of the house threw aside all dependance on the nurses and dressers of the wards, and devoted themselves twice, even three times a day, to the cleansing and cure of the decaying limbs and failing strength of their patients; they sunk without resistance or reaction—as if every spring and source of life was at once closed or quenched by some fatal touch.

This disease has been called hospital gangrene by the few eminent surgeons who have seen and described it, and is considered by them as somehow the product of hospital air, and highly contagious in its nature. The accounts of the disease in question are comparatively rare, though it is occasionally noticed as having been the terrible scourge of civil and military hospitals in Europe. Sir A. COOPER, one of the first of British surgeons, says, that “in some years they lose great numbers of patients by this disease” in the London hospitals. Mr. HENNEN, assistant surgeon and inspector of the British army medical staff abroad, speaks of this gangrene, in the military hospitals in Spain, as more terrible and destructive than the wounds and losses of a great battle. Mr. Hennen was himself superintendant of the medical police and practice of the principal British hospital in Spain; took a profound interest in the treatment of the cases of gangrene, and although he had the finest subjects in the world to act upon, the young, sound constitutions of picked recruits, he states, that the mortality in the hospital was multiplied threefold on the breaking out of this gangrene. Acting upon the idea that the disease was of hospital origin, and contagious, Mr. Hennen caused infinite attention to be paid to the personal state of the patients, and to cleanliness, ventilation, &c. of the hospital. The ceilings, walls, and even floors, were whitewashed daily; and all dressings and articles once used about patients immediately destroyed and replaced by new. With all this care, wisely and humanely practiced with unremitting diligence, multitudes were constantly sinking under the disease, and nothing arrested its progress materially till change of season and weather broke its power.

When the disease first appeared in our wards, (in November last,) I thought it was, what its name imports, truly hospital gangrene; and we immediately adopted every probable means of extinguishing its

source. These means were—more complete ventilation; removal of all possible nuisances, and of every thing which, by imbibing foul air or gases, might become a secondary source of the same evil; additional cleanness of apartment and person of all patients, and the free use of supposed disinfecting agents. I soon changed this opinion as to the origin of the disease, and pronounced the cause to be essentially atmospheric; or, as physicians speak, epidemic. I was led to this conclusion from reflecting on the fact, that the diseases of the season elsewhere, in the city particularly, were characterized by a very remarkable and unusual tendency to bad forms of local complication. The fevers were generally of a low type, and the prevailing epidemic, scarlatina, was often attended by ulcerous and gangrenous affections eminently destructive. Troublesome and painful eruptive disorders, (some wholly new, as eczema,) were very common, and local injuries were apt to assume a bad condition. Even leech-bites and blisters were so frequently followed by gangrene, that some physicians on that account abandoned their employment for the time. It was not long before my opinion on the cause of the disease in our hospitals seemed to derive confirmation from the fact, that a number of cases were brought to us from the city with extensive gangrene, as completely formed, and as eminently bad as in any of our own unfortunate patients. Other diseases, debilitated habits, hospital confinement and air, no doubt gave to our patients a strong predisposition to be affected by a noxious atmospheric state, and favoured its worst influences. This is the operation of hospital life under all circumstances; but I am fully persuaded that there was no *special* or *peculiar poison generated in our wards* which gave origin to the blighting mortification that spread among their inmates during the past winter, and not yet wholly extinct. It is to meteorological agency, not to local miasm, I would refer the cause and existence of the formidable disease by which we have suffered so greatly. This conviction on my part, however, ought not, and did not, lead to any relaxation of vigilance on the score of a wholesome police; nor does it lessen at all the importance of endeavouring to suppress every source of evil influence upon the health of hospital patients. While I cannot realize the truth of the general opinion, that what is called hospital gangrene is essentially contagious, I by no means doubt that it is eminently contaminating. Every case of foul sore in a ward adds its own proper, though not specific vitiation, to the atmosphere of the place, and becomes decidedly injurious to others who lie under predisposition to have bad sores; while the individual, subject of the affection in question, can have scarcely a chance of improvement in an air im-

pure before, and rendered more unwholesome by his own morbid, general, and local excretions. In every view of the case then, it becomes infinitely important to be able to separate the subjects of bad local affections from others, and for the safety both of the one and the many to put the former by himself. After all the resources of art have been taxed for the means of arresting the disease I have just referred to, nothing ever has, or ever can, so effectually contribute to its check or cure as removal into air fresh and pure as can be obtained. I would say, that no ventilation, no care, no cleanliness, no antiseptic or disinfecting agents, nor any other expedient, can make an atmosphere sufficiently pure for the subjects of bad local affections, if that atmosphere is habitually used by a multitude of others, particularly of others, themselves in a state of disease.

We treated forty cases of malignant gangrene, the disease above mentioned, and were able to save only nineteen. A few were nearly cured once or twice; but relapsed and sunk. Some of our patients finally recovered, after two and three successive attacks.

I think it proper to renew the assurance, which I have before had occasion to give the trustees, that the medical department has constantly experienced the prompt and efficient concurrence of the keeper of the institution, in every measure requiring his aid, which was deemed necessary for the good of any class of patients. Nothing has been neglected which seemed conducive to the success of our exertions, for the sick of the house.

Respectfully submitted, .

T. H. WRIGHT, *May 1st, 1831.*

The form of gangrene to which the foregoing report refers, as having added so seriously to the mortality of the current year in the Baltimore Alms-house, was wholly novel, as far as my information extends, at the time it introduced itself into that institution, toward the close of the year. The surgical wards of the institution present constantly a large number of ulcer cases, of nearly every description, from the simple indolent, to the highly irritable, the phagedenic, and the sphaceloid, or gangrenous; but these had almost uniformly yielded, sooner or later, to careful attention; we had seldom encountered any permanent difficulty in the treatment or cure of those cases; nothing peculiarly formidable in the condition, or absolutely invincible in the character or tendency of any of the sores which were continually falling under inspection. By the usual means, varied in their adaptation, to the character of the ulcers, and the constitutional state of which they were consequences, or concomitants, and more than all

by rest and regulated diet, nearly all meliorated in time, and at last got well. In the sudden and rapid degeneration, occurring to the ulcers in our wards, in the winter of 1830-1, the result was far different; this description, or rather condition of ulcer is unprecedented among us, alike in its character, course, and issue. But little time was here allowed for studying the nature of the affection, or choosing appropriate antagonist means; and after the utmost care in the selection and unrelaxing diligence in the employment of what seemed the most suitable remedies, local and general, the event, for the most part, was but a repetition of disappointment and defeat. The disease in question once established, its local development moved on with rapid pace, and indefinite destruction of parts, toward its too common catastrophe, in defiance of our best attempts at restraint, or counteraction.

It may perhaps admit a doubt, whether the disease noticed in the prefixed report, and to which the present remarks apply, was really the same affection denoted and described under the term hospital gangrene; the necrosis hospitium, or phagedena gangrenosa of modern surgeons. With the striking analogy subsisting between the affections in question, in regard to place and circumstances of development, as well as manner, rapidity, and destructiveness of progress, the conclusion seemed almost inevitable, that this was essentially the same disease, which in other places, under like circumstances, had arisen, spread, and destroyed in a similar way. Every thing connected with the appearance and multiplication of this affection in our wards, seemed so strongly to imply the probable origin, and peculiar nature of the disease, as almost necessarily to stamp upon its very face and aspect, that name, now so familiar and formidable, hospital gangrene. Such we deemed it on its first appearance in our wards, and by this term it was discriminated among us for a short time. Yet there was always present with the affection, as it was displayed in our patients, certain discrepancies between the disease before us, and the characters of hospital gangrene, as defined by eminent surgeons, sufficiently marked, to suggest doubts of the identity of the affection, or if intrinsically the same in nature, showing in our cases a curious departure from the customary symptoms and course of that disease. Both the local diagnostics, and the constitutional signs, differed materially in our patients from the description of the same as the disease has appeared abroad, and especially as it prevailed in the foreign army hospitals. The diversity alluded to, was not casual merely, or existing only in some instances of the disease, but so general and constant, as to apply to every case, one solitary instance excepted, that

occurred in our wards during the winter of 1830. From this fact, and other considerations relative to the probable origin and propagation of the disease, we soon ceased to regard or distinguish it, by the borrowed term, and for the greater part of the time it was with us, recognised by the denomination, endemic, or season gangrene.

As I design only a correct general account of the disease which occurred to our patients, omitting a detailed history of the cases themselves, the diversity alluded to in the preceding paragraph, will be best illustrated by contrasting the description of hospital gangrene, as it is reported from abroad, with the distinctive marks of the affection which forms the subject of this article. The following is perhaps as clear and correct an account of the symptoms and local characters of European hospital gangrene, as can any where be obtained. It is substantially, almost literally, the description of Mr. Hennen, one of the most experienced, judicious and candid surgical writers of the age; a man who has honoured his country, his profession, and himself, by the extent and value of his official labours, in an arduous public duty; and not less, by the zeal and fidelity with which he has collected and reported much instructive matter, and many interesting facts, forming an important addition to the general stock of medical and surgical knowledge.

Hospital gangrene is introduced by primary constitutional disorder. The subject, who is understood to have some wound or ulcer hitherto in a healthy state, complains of severe pain in his head and eyes, of want of sleep, and loss of appetite, and these feelings are accompanied by quick pulse, and other signs of fever. His wound, or ulcer, previously healthy, and good looking, becomes tumid and painful, loses its florid colour, and puts on a dry and glossy coat. This is the first stage; in the next, the febrile symptoms increase; the skin around the sore acquires a high florid hue, which soon changes to dark red, then bluish, or livid, and at last, black, with vesications about the part, while the rest of the limb is disposed to œdema. These appearances were present in the first twenty-four hours, and at this period also, the wound or ulcer, whatever its original shape, invariably assumed the circular form. The sore now acquired hard, prominent, ragged edges, making a cup-like appearance, with points on the margin, of a dirty yellow hue, while the bottom of the sore was lined with a blackish slough.

The rapid progress and circular form of the ulcer were highly characteristic of hospital gangrene, and obtained universally whatever the seat or shape of the primary sore. The originally affected part was always the centre of the wide-spreading diseased circle. The

discharge from the part in the second stage of gangrene became dark and foetid, and the pain was extreme. The gangrene still advancing, the increasing cup-like cavity was filled with fresh sloughs, rising above the surface, and the erysipelatous liver and vesications around the sore increased; while chains of inflamed lymphatics could be traced from the sore to the nearest glands, there exciting inflammation, suppuration, and a new nidus for gangrene. The face of the patient assumed a ghastly appearance; his eyes became deeply tinged with bile; tongue loaded with brown or black fur; appetite gone; pulse sank, and proportionally accelerated. In this stage the slightest change of posture, or the least examination of his sore, put the patient to great torture, and any movement of the affected limb was followed by tremors and spasmodic twitches. When those nervous affections came on, the bravest soldiers betrayed the greatest imaginable impatience and depression of spirits. Men who had borne amputation without a groan, shrunk at the washing of their sores, and shuddered at the sight of a dead comrade, predicting their own speedy dissolution, and sinking into sullen despair. The third and last stage was now rapidly approaching; the surface of the sore was covered with bloody oozings; repeated and copious venous bleedings came on; the sloughs were successively cast off, and succeeded by others, showing, when detached, a surface studded with specks of arterial blood. At length an artery sprung, which commonly burst if tied, and when compression was employed, the whole limb swelled and passed into gangrene. Incessant retchings, with coma, involuntary stools, &c. closed the scene.

Such is a condensed account of the material symptoms of hospital gangrene, so fully and faithfully reported by an intelligent and able surgeon, who superintended its treatment in the principal British Hospital in Spain. In some respects the description applies well to the gangrene which infested the wards of the Baltimore Alms-house in the winter of 1830; in many, and some important points, the defect of resemblance is very great. In all the cases of the Bilboa gangrene, decided constitutional symptoms, chilliness, head-ache, fever, foul tongue, &c. preceded, or were cotemporaneous of change in the state and aspect of the sore, about to pass into gangrene. In many, even the large majority of gangrene cases in the Baltimore Alms-house; the patient neither showed nor acknowledged any unusual disposition, until after his sore betrayed in its appearance unequivocal marks of established and advancing degeneration. Not one of all the early and bad cases of gangrene in our wards was ushered in, or announced by distinct constitutional signs of fever. No subject of

the affection complained an hour in advance of the most evident change in the state of his sore, of chill, head-ache, or any particular disorder, of which fever made a sensible part. Many, and those often among the worst cases afterwards, neither knew nor suspected that any thing unusual had occurred to them, until some part, often one half, of an extensive ulcer, looking and feeling well at the previous dressing, was already blighted and sloughing. In all these instances, the palpable constitutional disorder, which afterwards showed itself more or less severely, ensued to the altered state of the part, and increased gradually until it was distinctly revealed in the changed and sickly look of the patient. Even then, the dull dejected countenance and listless manner, often bespoke more indisposition than the individual acknowledged himself to feel. Such was especially the fact in regard to the earlier cases of the disease in our wards. At a later period of its course, the local affection was frequently introduced by unusual sensation in the parts, which was sometimes merely uneasiness and aching, in other cases pain, so severe and protracted, as to keep the patient all night awake and suffering. In the latter instances, the worst description of our cases, a marked invasion of fever was never perceived; the patient was not sensible of having been chilly or cold, and hot simultaneously; his head was uneasy, but rather light, or confused, than aching; disordered more as he thought, by misery in the sore, and loss of rest, than by pain of the head itself. The pulse in those cases was always quickened, and commonly small; skin rather warm at first, but below fever heat, and sometimes unnaturally cool throughout.

The local characters of the two affections, the gangrene abroad, and the mortification in our wards, were not less strongly contrasted than the manner or degree of constitutional disorder, by which change in the part was attended. The incipient gangrene of the former was announced by a *tumid*, painful, dry, and glossy state of the skin around the sore, which were soon followed, first by a *high florid red*, speedily becoming *dark* or *livid*, and ending in *vesications*; with *hard*, *prominent*, and ragged edges, &c. When the ulcers of our patients were falling into gangrene, none of these signs were present. Often one half of an extensive ulcer was already dead and sloughing, while the marginal integument of the sore was thin and soft, rather paler than usual, or else quite natural in appearance. Sometimes the centre, again part of the circumference of a sore, was found suddenly blighted and dead, and as yet, every part, save the degenerated spot, was fresh-coloured, granulating, and apparently sound. When, at the next dressing perhaps, the whole sore was found cankered, and

every trace of life extinguished on its surface; the bounds of the decayed structure, if still definable, were flat, rather fallen in, than raised or retorted, and seldom even a blush of colour fringed the still dying textures. Neither was their at first, in our cases, any general swelling of the limb, no primary œdema, and never vesications; the whole member, in all the early periods of the disease, was pale and flaccid; yet about the worst stage of the affection, the seat of gangrene was sometimes bordered by a pale œdema of small extent, and when sphacelus had nearly encircled a limb, so as to interfere with the life of the parts below, the foot for example, the latter then swelled very much, and almost immediately passed into total death.

It is further alleged of hospital gangrene, so well described by Mr. Hennen, "the wound or ulcer, whatever its original shape, invariably assumed the *circular form*;" and this was regarded as a prominent diagnostic of the particular affection. The same feature was never recognised in the endemic gangrene of our wards in the winter of 1830, nor was there an obvious tendency to any definite form. The middle, the upper or lower margin, or the lateral portion of the ulcer indifferently, was the starting point of decay; and wherever the blight commenced, it spread up or down, or inwards, or the reverse, but commonly in one direction only for some time, twelve, twenty-four, or thirty-six hours. Generally the sloughing process preferred the longitudinal axis of the limb, confining itself for a time to a narrow tract, bordered on one or both sides by a line of still granulating surface. The slough in this way often defined the course, and to a degree, the form of some subjacent muscle. Whatever the form or direction of the gangrene, it never stopt at the original limit of the ulcer, but moved onwards without a pause, if not arrested by treatment, till the whole limb was disorganized, or the death of the patient anticipated that consummation. As we had nothing of the circular figure of gangrenous ulcer, there was, for that reason, none of the cup-like appearance attributed to hospital gangrene abroad. There the original sore is said to have been always the *centre* of the spreading diseased circle. In our wards the mortification was always undefined as to form, and not unfrequently one-half; especially the upper of the original sore would be alive, and tolerably good looking, when the other half, and much of the extremity below the part previously diseased, was extensively killed.

These are some of the more obvious discrepancies between spontaneous, (termed by us endemic,) gangrene, as it appeared in the wards of the Baltimore Alms-house, and the disease called hospital gangrene, by respectable English and Continental surgeons. The

latter name, as is well known, is derived from the places the disease chiefly infests, and whatever be the fact as to its necessary, or only incidental development in those places, or its essential contagiousness, &c. there is a suitableness in the term, which renders its employment superior to any just ground of objection, or necessity of change. In some particulars, there was a manifest similarity, in the local circumstances, the habits, if the expression may be used, of the Alms-house gangrene, and that, with which it has been, in other respects, just contrasted. In our cases, as is stated of the disease abroad, the skin and cellular texture were the principal seats of gangrenous degeneration. Commence where it might, in the centre, or on the side of a sore, the sloughing process was never active, until the surrounding skin became involved. When this happened, the dead integument and cellular membrane, soon after, lay in sheets, more or less extensive, on the parts below, and when cast off, or taken away in dressing, the surface from which they were removed would sometimes present, quite freshly, the colour and actions of life. The proper filamentous tissue of the muscles themselves was next invaded, and even after a second sloughing from the same surface, the muscles underneath would appear nearly natural in colour and form, looking as if newly and cleanly dissected by art. This representation of life amid death, or more properly speaking, this evidence of different capacity and retentiveness of life in different textures, did not long continue to attest resistance to the spread of vicinuous morbid action. Except when a fortunate change could be soon effected, all parts, whatever their physiological attributes of self support, or reluctance to share the condition of other tissues, were soon blended in a common ruin, in which distinctness of original form or use was utterly effaced.

In another respect, the occasional appearances of the decaying structure was alike, in the cases described abroad, and in those we saw in our wards. As successive sloughs were cast off, the surface exposed in our cases, was very generally marked by the "small, thickly-studded specks of bright blood;" so particularly noted in the Bilboa gangrene. We had none of the venous bleedings spoken of as common in the cases of foreign gangrene, and only one instance of serious arterial hæmorrhage. This occurred in a case amputated long before on account of traumatic gangrene, ensuing to bad compound fracture of the leg. The parts had healed, but from fault of habit, chronic inflammation lingered about the coverings of the stump, and periosteum probably rendering the part somewhat tender. Sphaceloid gangrene took place in this case, opened the stump anew, destroyed

the coverings and caused exfoliation from the femur. The disease was arrested, the dead textures thrown off, and the part was considerably advanced in healing, when after one or two partial bleedings, ceasing spontaneously, copious hæmorrhage occurred in the night, and was instantly fatal. The artery was found dilated and diseased, softened and ulcerated, in the greater part of its tract. In one thing the alms-house gangrene uniformly differed from that abroad. We had no case in which "chains of inflamed lymphatics could be traced to the neighbouring glands, there lighting up inflammation, suppuration, and a new nidus for gangrene." In none of our cases was a secondary, distant, local affection, developed under morbid association with the first; none in which gangrene appeared any where, except as it spread continuously from its primary seat.

The constitutional derangement in the gangrene cases abroad, is stated to have been strongly represented in the countenance. "The face of the patient assumed a ghastly appearance; the eyes became *deeply tinged with bile*; the tongue loaded with *brown or blackish fur*, &c. In marked distress of countenance, the subjects of gangrene in the Baltimore alms-house, generally corresponded to the foregoing statement. There was often strong expression of misery in the face of our patients; but this was not universal; nor did it commonly exist *at first*. More usually it was not till some days after gangrene was revealed in the sore, that the countenance put on a character of ghastliness; a state of fixed contraction, full of suffering, which description cannot represent." In some of our patients, particularly those who afterwards recovered, the expression of countenance was rather that of quiet melancholy, than the strong conflict of alarm and anguish which sometimes appeared. Whatever the cast of countenance in the acute stage of suffering, all had a tendency to that, which became, sooner or later, the predominant character of face, in all the bad cases; profound despondency and utter recklessness of self and every thing. Long before death, or extinction of consciousness, it was often extremely difficult to arouse the patient of any appearance of concern, or act of concurrence, in the efforts to sustain him, either by food or medicine. The state of the *eyes and tongue*, was remarkably different in our cases of gangrene, and the same, as quoted from the foreign account. Not a shade of yellow ever appeared, (except in one instance,) on the eyes of those who were subjects of gangrene in our wards; on the contrary the tunics were perfectly clear, until after twenty-four or thirty-six hours of pain and sleeplessness, the little vessels of the white coat became considerably engorged with blood. Even this change was not universal; the eyes often looking natural,

except dull throughout the case. The tongue differed as much as the eyes. Instead of being loaded with brown or blackish *fur*, it was at first not coated at all; not the smallest quantity of sordes of any kind upon it. It was generally nearly natural in appearance at the commencement of the local disease; either a little too red, or too pale; and occasionally a fine lymph excretion on its middle. Nor, did it ever become loaded with brown or dark *fur*, at any stage of the affection. If the case was violent and going on to extremes, the tongue gradually assumed the dry red polish, as in the glossitis of irritation; in this state it remained throughout, the surface sometimes cracking from utter dryness. It was always the tongue of gastro-intestinal mucous irritation, rather than of gastro-biliary congestive derangement.

The subjects of gangrene in the foreign hospitals, are described as betraying the "utmost impatience and depression of spirits, shrinking from the slightest handling of their sores; and shuddering at the sight of a dead comrade," &c. In some of these respects, the gangrene patients in our wards were similarly affected. With the latter however, it was not so much the irritability of impatience under suffering; as the sign of extreme dread, and subdued resolution. Our patients often shrunk from the touch of an assistant with cowering fear and timid entreaty; becoming objects of compassion alike for their weakness and their misery. But they did not betray much sensibility about the sufferings of others, and were seldom known to advert to the fate of those, who had died of the disease, which was destroying themselves. Profound apathy came to be the more general moral influence of the affection; intensity of personal distress extinguished every thing like sympathy for others. In a few instances however, neither excessive depression, nor particular obtuseness were betrayed; the patient continued nearly as alert and attentive to his state, as in other affections. This was oftener the case, with the black than the white subjects of gangrene, though sometimes met with in both.

The preceding outline is given in order to show the characters of resemblance, as well as of contrast, in the physical and moral influences of the same, or a very similar disease, as it has occurred under like general circumstances, and presumptively from like sources, abroad and at home. While in both situations the disease thus compared presents features of similarity numerous and manifest; there are evidences also of great modification in many respects by some unknown agency—whether this be of climate influence, or personal, or local causes.

The surgical ward of the Baltimore Alms-house was the first, and continued to be throughout its reign, the principal theatre of the en-

Memetic gangrene briefly described in the foregoing account. This ward is devoted entirely to the class of diseases and injuries denominated surgical; wounds, fractures, ulcers, &c. It consists of a single apartment in the third story of the building, seventy to eighty feet long, by forty wide, with high ceiling, about sixteen feet elevation, and is both well-lighted and ventilated by a range of windows in each wall, eighteen in number. In this large space all is open and clear, and no obstruction of any kind to free atmospheric circulation. The apartment contains four rows of beds, arranged on the sides of the room, with a wide central space from the upper to the lower end of the ward, and another sufficient passway between the double row of bedsteads on each side. The frames which support the beds are of cast iron, with plank bottoms; the whole of which can be taken apart and put up again in a few minutes. The beds are of straw or hay, changed frequently; the coverings, coarse linen and cotton in summer; the same, with one or more blankets, in winter. The number of beds in this ward varies from sixty to eighty; they are all single, and in no case more than one patient in a bed. The police of the institution is excellent, and attention to cleanliness never relaxed. The floors of all the hospitals are scoured regularly once a week, and oftener in weather which causes them to be sooner made dirty. Whitewashing the walls and ceilings is repeated five or six times a year. All patients before admission into the wards undergo personal washing and change of clothing.

The surgical ward had been unusually full some time before the breaking out of that peculiar and novel form of mortification, of which it came to display so many appalling cases last winter. But with the exception of one or two bad compound fractures, in a state of tardy repair, there was no appreciable source of extraordinary contamination to the air of the apartment. There were many ulcers—some of them very extensive, but improving as much as time of treatment, habit of the individuals, &c. might authorize expectation.

I have already said it was not my intention to describe the cases specially, or with reference to the character and progress of gangrene in each particular instance, but to include in a general account its essential characteristics in all; noticing only a few cases particularly, as they seem to supply a more distinct image of the affection and its consequences. By the young medical gentlemen who acted with me at the time, M. KENNY, M. D., J. B. STEPHEN, M. D., W. A. SELDEN, W. PRICE, and W. YATES, M. D. the fidelity of the representation will, I am sure, be readily acknowledged. The terrible character of the affection, and the arduous duties they diligently per-

formed for its relief, (Kenny, Selden, and Price particularly, as having the greater part of this class of patients,) will long remain fully impressed on their recollection.

The disease first showed itself late in November, but did not multiply rapidly until December, January, and February. Its more common form of invasion was as follows. Some patient having an extensive ulcer of the leg, hitherto in a slow, but regular process of healing, complained of having suffered through the previous night unusual *misery* in his sore, which prevented his sleeping. His countenance was now more red, or perhaps paler, than common; with an expression, either of sadness or fretfulness. His pulse rather quick, skin slightly warmed, tongue clean, moist, but somewhat reddened; head a little confused, but not painful; appetite impaired, but no sickness of stomach. Such were the constitutional signs generally in patients who, during the reign of endemic gangrene in our wards, complained of having felt *unusual misery in their sore*. Throw off the dressings now, and you would almost certainly find the following state of parts. In the centre often, sometimes on the side, of a large well-granulated ulcer, you see a *dull white patch*, occupying about one-fourth the superficies of the sore. This part had been a good, granulating surface the day before, it was now *dead*. The integument bordering the ulcer was unchanged, neither thickened nor inflamed, but keeping as yet its thin cicatrizing aspect every where, except, perhaps, nearest to the blighted spot. Even the granulations of the rest of the sore were not otherwise altered than in looking paler or deeper red than common. In the next twelve hours the central or lateral slough had extended itself, in the one case, to the original *inferior* limits of the ulcer; or, in the other, included a considerable portion of the adjoining integument and cellular tissue. Now the parts below, or at the side of the former bounds of the ulcer, which had thus become implicated, thickened up as they passed into death, but they did not inflame: the blight was too sudden and complete for the intermediate state which inflammation imports. Up to this stage of the disease the dead parts were *dirty white*; these sloughs were now about to be cast off, and in the rapid decomposition of the decayed textures, some parts became *dark*, and imparted a *blackish* tinge to the sore and the dressings. When this colouring matter was washed away, the surface underneath was pale red, coated with much tenacious mucus. In the further progress of gangrene, the integument and cellular tissue above the instep, and on the inside and outside of the tibia, (the leg was the common seat of the affection,) conducted the sloughing process downwards, and if it ex-

tended below the ankle, or penetrated deep by the side of it, the whole foot was speedily killed. Some patients lingered out a few miserable days after the total death of all the lower parts of the limb; in most, the powers of life failed before that lesion was fully effected.

In the cases just described, the blight and subsequent sloughing commenced at some central or lateral portion of the ulcer, and proceeded regularly downwards; not advancing upwards, but leaving the superior portion of the sore and the higher integuments in nearly the same state as before gangrene set in. Many exceptions occurred to this; and, as was mentioned in a former part of these remarks, the gangrene development often preferred the longitudinal axis of the limb. Here, after the usual precursor, *misery* in the sore, a white line, of various breadth in different cases, would be found at the ensuing dressing occupying the whole length of one side, the inside or outside indifferently, of the ulcer; its extremities sometimes defined within the upper and lower bounds of the sore, more generally insensibly lost in the integument above and below—part of which was already detached from the subjacent muscles. At the next opening of the sore, the width of this blighted tract was greatly increased; part of it hung loose in the middle—its ends still adherent, and it yet retained the dirty grayish-white appearance. In a few days more, the blight still going on, integument, cellular tissue, and even the superficial muscles hung about the leg like tangled shreds of macerated tow. In some instances, successive sloughs so deepened the gangrenous tract, that the bones were bared in places, and speedily turned black; in others, when sloughing had incavated the limb greatly between the bones, the periosteum of the tibia still maintained a coat of pale red granulations. It was in these cases of longitudinal sloughs peeling off the deep cellular web, the proper fascial tissue of the muscles, we had the exhibition of “small, thickly-studded specks of bright blood. In the casting off of blighted integument and subcutaneous textures, no such representation appeared; more commonly a dirty soap-like mucus obscured all the parts from which these latter were detached.

The constitutional state in most of the cases was such as I have described. In the first stage the patient was uneasy and fretful, looking anxious and impatient, complaining of misery, the common expression, in his sore, and earnestly solicitous of some relief. His pulse was quickened, without being greatly accelerated; skin a little warmer or cooler than natural; face flushed slightly, or more pale than usual, but never sallow; tongue somewhat reddened; appetite

impaired; stomach not sick; bowels in no way disordered. In the second stage pulse frequent, but small; skin dry, rather cool; countenance dejected; frequent moaning; less complaint, (with some exceptions,) of pain in his sore; extreme dread of having it dressed; indifference now about food or drink; seldom nausea or sick stomach; bowels inclined to be loose; tongue redder and dryer, slightly tremulous; face dusky or pallid. At this stage rapid emaciation of the body, and limbs was apt to occur. In the third period of the disease symptoms the same, but all aggravated. Patient sunk down in bed with his face covered; breathing thick, rather fast; countenance haggard, with a cloud of insensibility and fading consciousness—the vestiges of some delirium the night before; arousing slowly, with look and manner implying reluctance to be troubled; and, after undergoing necessary attention, relapsing at once into the state of apathy, out of which he had just been raised. In this condition, diarrhoea, amounting almost to incontinence, had supervened. Now, medicine or food could only be given by a degree of mild coercion; the patient asked for nothing—thought of nothing—desired nothing—but to lie still, and die. Indifference to life came to be a marked and predominating final effect of the bad cases of gangrene in our wards. The fatal cases varied in their course and duration from four days, the shortest period, to seventeen, which was exceeded only in one or two instances. Convalescents observed nearly the same; some recovering promptly, others tediously.

The factor of this gangrene was particularly strong, and could scarcely be quenched or overruled by the most powerful antiseptics—the chlorides of lime and soda. It was not the ordinary stench of putrescent animal matter, but a pungent, ammoniated exhalation, peculiarly characteristic of this affection, and distinguishable from every other odour. It escaped freely through all the coverings of the sores, and might have served, before exposing the ulcers, as an almost certain evidence of their condition. This offensive effluvium appeared to be eliminated only while gangrene was in progress, ceasing always, I think, to be perceptible as soon as further decay of the living parts was arrested, although much dead structure was yet about the limb imperfectly detached.

In the treatment of an affection embarrassing from its novelty, we had additional difficulties arising out of the absence of those means of instruction, which the signs of diseases usually supply, of their real nature. We could discover in the insidious manner of attack, and equivocal state of the patients in the early period of the disease, but uncertain guides of practice; and in the result of our efforts to

relieve, there was little to gratify the laudable pride with which the physician looks on the triumphs of his art, and the benevolent achievements of his skill. In vain we scrutinized carefully, indeed, anxiously, the state of the patient upon whom gangrene was making its demonstration; to detect some prominent physiological error; some functional defect or vice, which might represent the source and train of pathological development, falling with such sudden and terrible effect upon the weak and irritable point. All here however was nearly a blank. Profound disorder of the sensitive and motive functions might be inferred from the consequences; but the source of these was too faintly imprinted on the general aspect of the case, to suggest the primary occasion, or indicate the principal seats of radiated irritation. The workings of constitutional disorder, preparative of some morbid display, are often secret and unperceived, veiled under the delusive semblance of health; but in nothing have I experienced this truth more forcibly, or known the obscurity alluded to, greater, or more impenetrable, than in the instances of spontaneous gangrene, as revealed in our wards. On the day preceding the development of the local disease, it could never, as far as I was able to learn, be realized by the individual who was to suffer, or by his attendants, that his state was less comfortable or satisfactory, than for a long time before. Yet there can hardly be a moment's doubt that the disease was truly constitutional, and that some cause had been operating on the system, preparing it for the explosion which followed. The essential final pathology of the affection, probably lay where general diseases commonly have their proper seat, in altered excitability, and perverted action, of the entire system of organic nutrition.

The fever in the first moments was always inconsiderable, and often inexplicit. The stomach betrayed neither nausea nor morbid sensitiveness; nor did the tongue import, not very distinctly at least, that secret irritation of the mucous organism of this viscus, which is often really great, without being openly revealed. The most evident and common error of the stomach, was early loss of appetency for food. This defect was general even at first, universal, one or two days after gangrene was betrayed. Neither did any thing appear that was calculated to direct attention particularly, to altered state, or fault of action in the great viscera, allied in office to the organs of assimilation. There was none of the nausea, the tinge of eyes, or of skin, which might import accumulation, overflow or pravation of bile; it seemed more probable that torpor or low irritation of the nutrient and secretory textures of the liver, had brought on that organ a condition of hebetude, in which its office was for the time locked up. Whether

a constitutional state of accumulated irritability, and subdued reactivity, power, were to be regarded as a cause, or an effect of loss of the functions of relation, by the important viscus in question, it was alike necessary to provide for the diffusion and equipoise of sensibility and excitement, general and local. The remediate indication and means in either case remained intrinsically the same.

A guarded antiphlogistic plan was generally pursued; consisting in the employment, externally, of means to abate surface temperature and action, when in excess, or to excite moderately, where these were deficient. The internal agents were commonly calomel, in medium doses, sometimes blue mass, alternated with mild saline purges, and the alkaline or neutral solutions, as counteragents both of fever and gastral irritation. With the calomel or blue pill dose at night, opium singly, Dover's powder or acetate of morphia, was generally combined to obviate pain, and procure rest. The diet was bland and light, consisting of rice and other farinaceous articles, prepared with particular attention to agreeableness, bread of the best kind, with milk, or in form of panada, vegetable soup, tapioca or sago gruel, and when preferred by the patient, coffee and tea. The usual drink, barley or rice gruel, acidulated milk and water, or lemonade.

As the cases glided toward the low states of fever, with feeble general action, and marked defect of action on the surface, it was our endeavour to sustain the former by gentle stimuli of various kinds; principally the acetate of ammonia, (spirit Mindereri,) or the aqueous emulsion of camphor, wine whey, &c. When tonics were deemed necessary, we employed them in many of the ordinary forms; infusion of cinchona, with aromatics, more commonly solution of extract of quinine, with mineral acid in small quantity, and some aromatic ingredient. Extract of bark, or the sulph. quinine, in the form of pill; with addition of camphor, ammonia, or opium, as indicated, were at times employed. There were in short, few medicines whose properties are deemed suited for the adynamic state, which were not called on for their sustaining powers, in the low inexcitable states, to which we had often to minister. For the purpose of restoring animation to the chilled and torpid surface, topical excitants, in the modes most conveniently adapted to the respective cases, were frequently renewed. Subjecting the extremities to warm vapour fomentations, as a means of beneficial influence at once on the parts, and the system was practised as far as could be done without fatigue or exposure of the patients. To solicit some feeding, where appetite seemed utterly extinct, and with it all chance of even partial support, almost unrestricted choice of food was offered; cordials, in moderate quantity,

ere supplied, as a wish was expressed for them; wine diluted for rink, or added to bread tea, or to rice or tapioca gruel; stronger excifiers, brandy toddy, milk toddy, &c. were given when inclination for these alone, or former habits of the individuals appeared to indicate their propriety. Porter was allowed freely, generally in the form of portaree, or with water and sugar.

• The local treatment, the applications to the gangrenous sores was suggested and varied by all our previous experience in the management of ulcers, by every seeming indication or analogy, and by all we could learn from systematic works, or special reports on similar affections. These were applied with due frequency, with exactness of renewal, and with patience, care, and skill, in all the detail of dressing, which did great credit to the humanity and high sense of professional duty on the part of the students of the Institution, by whom nearly all this necessary labour was performed. Cleansing the sores was generally done by complete ablution with a ley made of old Spanish soap and warm water; the limb and sore were next dried by absorbing all moisture as well as possible, and the proper dressings then carefully laid on. The kind of application was adapted, as nearly as we could so regulate it, to the character and state of the sore, and adjoining textures; the signs of irritability, or on the contrary, of defective action and languid vitality, determined for the most part, the choice of topical agents. The general existence of pain in the parts in the first instance, called for soothing means, and we sought these in tepid bathing and light poultices, linseed meal, with bread and milk, charged occasionally with tinct. or solution of opium. Instead of simple water, as fomentation for the sores, decoction of chamomile in milk, was sometimes used, and the bread poultice made up also with that decoction. Soon, however, the factor and fading hue of the sores, caused a resort to the more stimulant, together with the antiseptic local means. These, in the course of treatment, were very various, all at times with apparent good effect, and again all failing to accomplish what was desired, or after appearing to answer well for a time, losing their influence, and requiring to be changed. The forms of fluid stimulant applications tried in different cases, or successively in the same case, were numerous, consisting in decoction of oak bark, of carrots, and of rhus glabrum, dilute pyroligneous acid, chloride of soda, reduced in various proportions; nitrous acid with water, forty, sixty, or eighty drops to ℥xvj. Certain stimulant mixtures were employed in cases apparently suited to their exciting properties; these were common salt, vinegar, and honey, sufficiently diluted; lime water, linseed oil, and laudanum in the

highly irritable phagedenic sores; and to those of the opposite class, the insensible and cold, or pallid, the mildew forms of sphacelus, the turpentine mixture, or comphorated spirit, with tinct. of myrrh. To one or other of these stimulants, &c. succeeded poultices, either the oak bark poultice, the fermenting poultice, the carbon poultice, or the cataplasm of carrots, the latter finely scraped, or more usually boiled and beat into a uniform pulp. The carrot poultice came at last to be always preferred. After perfect ablution with the warm soap ley, and absorbing the tenacious mucus which coated all the parts, and was difficult of removal, it was our usual manner to cover the surface of the ulcer with lint wetted with whatever lotion or stimulant mixture was employed in the case, and to envelope the whole in the carrot poultice agreeably warm. When sloughs were partly detached, or living surface exposed, lint spread with some ointment, simple cerate, basilicon or citron ointment was laid on, and covered by the poultice. These dressings were kept in place by a roller, moderately tight, from the foot upwards.

Such were mainly the local means employed; other plans were occasionally tried, but commonly with less satisfactory result than our customary method just described. The mode of treatment pursued by BLACKADDER, and so highly, and it would seem, justly, commended by him, was fully carried out in one or two cases. His topical management of hospital gangrene, consisted in washing away the dead matter and excretions of the sores, with a weak solution of sub-carbonate of potash, then absorbing all the fluid about them, laying on a light covering of lint, charged with the mineral solution, Fowler's, diluted one-half to three-fourths, and continuing to moisten the lint with the same, until an insensible surface or slough was formed over the whole sore. Afterwards turpentine ointment, or a linseed poultice was applied till the eschar was thrown off, under which the surface was found good-coloured and granulating. This plan seemed for a time to arrest the progress of decay in the sore, and rouse it in places to efforts at new action; but we could never make the slough or eschar universally adherent at the same time, and every part eventually fell back into successive degeneration, and the patient, as too often happened under other treatment, was lost.

After all our experience with a variety of local plans and remedies, the only warrantable conclusion seemed to be, that the result was very little influenced by the peculiar properties of any of the agents employed; that none of them exercised any very certain or manifest controul over the tendency of the disease to keep its place, or enlarge its bounds. Beyond the simple effect of fomentation, cleanliness,

and fresh soft dressings duly repeated, and these I conceive of great importance; I was unable to realize that any thing was gained by local remedies, whatever their qualities or character. The carrot poultice properly made, appeared always to soothe very manifestly the morbid sensibility of the parts about the sore, and by promoting the comfort of the patient, became a valuable aid of treatment, and indirectly at least, the auxillary to convalescence.

Of our constitutional treatment and its effects, perhaps testimony substantially the same, as in reference to the local, might justly be given. It was, I fear nearly nugatory, and while I trust it was never positively injurious, am compelled to doubt also, whether it ever effected much actual good. There was, in truth, a perplexing absence of indications what to aim at, in the midst of the most lamentable proofs of serious general failing, and urgent necessity of assistance. Our constant attention to the comfort of the patients, kind and faithful nursing, especially our unremitted exertion to keep them in the use of some portion of bland nutriment, and not least, the habitual observance of a soothing, encouraging manner toward them, were, perhaps, the most important items in our general treatment. These sustained for a time the decaying strength of those who died, and helped to turn the scale in favour of such as happily recovered. From all I could discover, the contest came at last to be decided, more by the constitutional powers of indurance and reaction, than by the counteractive agency, or remediate effect of our medicinal means. This was a conclusion little consoling to our self-confidence, but so seemed the import of the general issue. Nor ought it to be wholly discouraging if such were really the fact. Better success might attend the exertions of others under like circumstances; or we ourselves might possibly contend better instructed, or with arms more efficient, or more wisely directed, in another encounter with the same adversary. At any rate, Physicians must lay their account with having sometimes to treat diseases, and with fidelity and perseverance too, in which the chance of success is greatly overbalanced by the probability of failure.

Aware of the reputed local origin and supposed infectious, if not highly contagious nature of hospital gangrene, we adopted, on its first appearance in our wards, every precautionary measure which might counteract the causes of its existence, or lessen the tendency to its multiplication. The apartments in which it was found, the surgical ward, and afterwards the hospital for blacks, though clean at the moment, to all appearance, were thoroughly washed and white-washed, and complete ventilation was maintained by keeping the

upper sash of some of the windows open all day, and more partially at night. The wards were purged of every thing, beds and necessary bedding excepted, which might become repositories of foul exhalations and secondarily fomites of contamination; all offensive matters were instantly carried out, and a wholesome police in all respects rigidly enforced. The modern favourites of disinfection, the chlorides of lime and soda, were freely and constantly used, though toward all such substances, as *antidotes of pestilence*, my faith is not equal to their reputation. That they are capable of neutralizing, or in some way overrule, foul odours, of dead matter especially, is out of all question; their effect in this way is evident and powerful. But of their influence as preservers from infection, or what their effect on those atmospheric properties, or the more special miasmæ, human effluvium, or excretions particularly, which make their peculiar impression on many, or all the living surfaces, to which they come in contact, is far from being established on sufficient proofs. I am not however desirous to impugn controversially the virtues or the value of the agents in question, because I have doubts of their truly medicinal, or antidotal powers. It is plainly desirable to remove or extinguish whatever is noisome to the senses, and for their qualities in this respect, the chlorides are a valuable contribution of modern chemistry, to medicine, as well as to the arts, the interests, and the comforts of life.

Without making the question of the strictly local origin of the disease, or its liability to spread by contagion, an argument either for or against the propriety of taking the subjects of gangrene out of hospital, we decided at once to remove all such from the presence of other patients. This decision had respect to the welfare of the individual affected; whatever the source of his disease, his chance of life would be bettered in a purer air than that of an apartment crowded with the sick. During the whole course of the affection in the house, we placed those who successively became its subjects in some situation out of the general wards, and separated them as much as practicable from any other patients. To this measure we felt ourselves much indebted for the partial success that recompensed our care of the gangrene cases. While from many circumstances we were led to doubt the contagious nature of the gangrene in our wards, we deemed it a duty not to permit any thing by which our error in this particular, if such it was, should be the means of adding to the number of sufferers by the disease. We acted on the wholesome advice of the advocates of the contagiousness of hospital gangrene, and destroyed, or abstained from using again, things used in cleansing the sores—

soiled dressings, &c. We laid aside the use of sponges altogether, and employed soft tow, old linen, lint, &c. to wash and wipe with, and these were destroyed immediately after. These precautions were taken, as recommended, for the purpose both of avoiding the possibility of inoculating other ulcers, to which the same sponges, &c. might be applied, with the matter of the gangrenous sores; and further, that the latter might not be subjected anew to any portion of the same morbid excretions once removed from them. Whether the former object was effected by our care in this respect we have no means of determining. Neither the regular dressers, the students, who often performed that work, nor any who, from their offices about the wards, were compelled to handle the person, dressings, &c. of the gangrene subjects, were known to suffer any consequences of such exposure resembling the effects of inoculation.

In one part of these remarks I have expressed a conjecture, that the gangrene cases in our wards last winter owed their existence to a peculiar constitutional impression effected by atmospheric or meteoratic influence. I know the idea of this source of such affections has been controverted as altogether hypothetical, and discredited as both obscure and improbable. Among the antagonists of this opinion are writers justly eminent for intelligence and knowledge, the fruit of careful observation, as HENFEN in England, and BRUGMANS in Germany, who, while they admit the atmosphere to be a medium through which the miasm of hospital gangrene may act, or be conducted, doubt, or deny its capacity ever to give origin to the disease itself. The objections of such men are always entitled to respectful attention; but on questions of this sort we must weigh the circumstances as they appear to our own observation, and decide, as correctly as we can, on the nature and kind of evidence they afford. From an impartial examination of every thing connected with the development and progress of gangrene in our hospitals, I was unable to account for either satisfactorily, on the presumption of a purely local cause of origin or means of propagation; and distrusting or rejecting these, the alternative explanation was meteoratic influence. It was not to any thing in the nature of a peculiar miasmatic cause I was disposed to refer the disease among us—nothing that I conceived to be epidemically infectious—but that there existed at the time some atmospheric state, or properties, from whose manner of influence on general health this affection might be one of the results in particular constitutions—or even in whole classes of persons existing under a common and like predisposition to be acted on. On this latter presumption, the susceptibility, not merely of individuals, but of many,

so grouped and circumstanced as to form a class peculiarly liable to atmospheric agency, we discriminated the mortification which spread through our wards by the term endemic gangrene. Among the reasons for this opinion, as to the probable cause of the disease, I have mentioned, in the report made to the governors of the institution on the state of health in the house for the past year, that soon after the breaking out of gangrene in our hospitals, patients were brought to us from abroad, from the city particularly, with spontaneous gangrene on them, as bad as in any of our own cases. These were persons of dissipated habits and morbid systems, to whom some form of fever, from season causes or influence of weather, had produced local developments, ending promptly in gangrene and sloughing. The subjects were females chiefly, and the labia pudendi, perinæum, and nates, were the usual seats of phagedæna gangrenosa, an affection purely constitutional or spontaneous, because not preceded by any local disease or accidental lesion. Under our own observation too, the constitutional basis of the affection, and its aptitude of origin independent of locality, or particular exposure, was strikingly displayed in a few instances, of which the following is one example. A young woman, K. Newman,* had undergone amputation of the nymphæ, which were greatly enlarged, and could not be reduced by discutient means. The parts were unfavourable for operation, because they were not merely enlarged very much, but in a morbid state—being converted into irregular scirrhusity and unhealthy suppuration, constituting the tuberculoid degeneration of the textures: some degree of the same character of chronic inflammation, thickening, &c. affected the labia and cellular tissues of the neighbourhood. The parts, however, improved after amputation, and made considerable progress in healing—but again thickened up to an extent rendering it necessary to repeat amputation, which, as at first, altered and improved the actions of the place for a time. It was a month after the second operation, and while the woman was under treatment adapted to the state of her habit and the local affection, the same form of gangrene, then prevalent in the surgical ward, was suddenly revealed in the part, and in four days terminated life. Now, this patient, at the time gangrene occurred to her, and for some months before, occupied, almost alone, a particularly airy and comfortable apart-

* The same mentioned, Case V. in the Report on Erysipelas, published in the 4th Vol. of the American Journal of the Medical Sciences, as cured of chronic Porrigo favosa of the scalp and face by a severe attack of erysipelas, then endemic in the Baltimore Alms-house.

ment in the third story of the centre building, and no case of gangrene, or foul sore of any kind, her own excepted, had been in that room during her occupation.

Besides the obvious inference from the only interpretation which a fact like the preceding admits—an interpretation wholly negative of any special, human, or hospital miasm, in the instance cited, there is reason to suspect that the first case of the description of gangrene under consideration, which appeared in the institution about the period to which the commencement of the disease in question is referred, was one fully formed before the subject of it entered the house. The first case which we noted as hospital or endemic gangrene, was registered as such about the middle of November—a case in which spontaneous gangrene supervened on extensive chronic ulcers of the leg. But there was a case of gangrene preceding this, in which the affection was probably the same in nature. In the latter part of October a man was brought to the alms-house affected with excessive tumefaction, and nearly complete gangrene of the whole scrotum. The account he gave was as follows:—He had been employed as labourer on a farm twelve miles from Baltimore,* where he took the bilious fever, as he termed it; had a severe chill, with pain in the head and fever, which lasted all day and night, and made him very weak. The next morning his scrotum was swelled, painful, and dark-coloured in places. On the second day of his illness he was sent to the alms-house, where he arrived about twelve o'clock. His scrotum was now very large, and nearly black in every part as high as the neck, where it was encircled by a bluish-white ring, which parted the black integument below from a pale red zone above. The part was not at all offensive to the smell, and no longer very painful. The man was weak; countenance pale and dejected; pulse accelerated, but not active; temperature moderate; tongue furred; head disordered; bowels costive; had taken no medicine during his illness. On being questioned very particularly as to any bruise, scratch, or accidental injury of the scrotum, denied that it had received any kind of hurt before or during his attack of fever. The case was treated by mild antiphlogistic means, moderate purging chiefly, weak spirit fomentation, and poultices locally. In a few days the scrotum separated at the white ring, mentioned as encircling its neck, and the whole sloughed off, leaving the vaginal sac enclosing the testes. This membrane entered slowly into granulation, and at last healed.

Reflexion on this case at an after period induced me to regard it

* In a marshy district, unhealthy in autumn.

as intrinsically the same with the endemic gangrene soon afterwards prevalent in our wards. The manner of attack, and the general symptoms, were more those of intense constitutional irritation, than of what is called bilious fever; they wanted the usual antonic reaction, and had nothing of the renewed paroxysmal form of the latter. The nature and suddenness of the local development also, was an effect wholly foreign to the ordinary marsh fevers—the autumnal epidemic of the region and climate. The man's state during his tardy recovery was very much like that of our convalescents from gangrene. Though apparently of robust constitution naturally, it was now difficult to keep him from falling back into a bad state; slow fever hung about him, and the gastral functions were frequently out of order, requiring constant attention; he was nervous, irritable, or dejected, to a great degree. When in this case former habits were inquired after, with reference to their possible influence on the character and effects of his illness, he declared himself, with much appearance of sincerity, to have been always temperate and regular in his manner of living. His general health he reported to have been good before his late attack.

Among the last cases of gangrene, the last but one, which occurred in the alms-house in the spring of 1831, a singular departure was exhibited from the common, and hitherto universal, form and manner of sphacelation. A patient in the infirmary for white females, S. Cummins, was under treatment for bad ophthalmia of the eyes and lids, for which a pea issue was kept open in her arm. This woman was suddenly taken, 6th of May, with chill, head-ache, high fever, and vomiting. In a few hours after the skin was jaundiced, the eyes strongly tinged with bile, and the tongue thickly coated with brown fur. At the same time, with the occurrence of these symptoms, the issue on the arm became the seat of acute pain, and the whole limb was stiff and sore. Upon looking at the part, the issue was found enlarged and blackened, its margin hard and prominent, and a belt of deep red colour surrounded it for some distance. What was formerly the issue, now constituted the centre of a large sphaceloid ulcer, which had the true circular form, and every other characteristic of "hospital gangrene," as described by Mr. Hennen. The constitutional state was equally congruous to the general symptoms in his cases. After controlling the irritability of stomach by magnesia, with an aromatic, and topical fomentation, the patient took calomel in large doses, combined with anodyne diaphoretics; and this actively purged off with senna infusion and salts; topical treatment, nitrous acid lotion with tinct. of opium, and carrot poultice. By continuing the

same general treatment three days, full hepatic and intestinal excretions were procured, and the febrile tumult effectually quieted; pain and inflammation of the part subsided; a deep, general slough was defined and separated, and in a short time the patient was comfortable and convalescent. This was the only case that occurred in our wards in which the local signs were analogous to, or the constitutional symptoms more than feintly resembled, foreign hospital gangrene. It was also the only instance of spontaneous sphacelation that happened in the hospital of white females, containing sixty to seventy patients, and among them many ulcer cases.

To give a distinct idea of the insidious invasion, with the sudden and extensive ruin sometimes effected by the species of gangrene described in the foregoing account, the following case is selected from others similar in kind, but none of them altogether so remarkable for the prompt and secret manner in which equal amount of mischief was accomplished. R. Egan, about forty-five years of age, spare habit, but pretty good general health, was under treatment for an ulcer, formerly very extensive, and ensuing to chronic herpes, (*impetigo scabida*.) of the leg. The ulcer was in a bad state at the time of admission, but had improved so much while in hospital as to be nearly healed. On the 13th of January, when Egan came in turn under examination, his appearance did not betray any thing unusual; he said he did not feel sick, but did not sleep well the night before, nor eat his breakfast that morning with so much relish as common. On being desired to show his sore, he raised up in bed with his usual alertness, unrolled the bandage, and removed the dressings; the whole leg was gangrenous, from two inches below the knee to the toes. The limb was shrunk, or collapsed, so as to be smaller than natural as far as the blight extended; the dead integument was grayish-white or ash-coloured, except in places where there were a few black lines or spots. The change in this case since the day before was scarcely credible; Mr. Selden, who had charge of the patient, assured me that the evening previous the sore on this man's leg was not larger than a dollar, and had a good granulating surface, with thin cicatrizing edges. Egan had suffered no pain in the part, and seemed scarcely unwell at the time this state of his leg was discovered, but died in four days.

The gangrenous affection whose course in the Baltimore alms-house, the preceding history records, declined toward the spring, both in frequency of occurrence, and degree of danger. In March and April there were but few cases, and none occurred after the middle of May; through the summer, autumn, and part of the present winter, we en-

joyed what we deemed a happy immunity from the presence of a disease, which our experience had taught us to look upon with terror and discouragement. In this interval of its absence from the house, frequent recurrence in thought to the symptoms, course, and termination of the disease, fixed a conviction in my mind, that the most important part of our plan of treatment, was virtually wrong, inasmuch as it was only partially right. I now believed we had suffered ourselves to be deluded by the equivocal representation, and languid excitement, in the onset of our cases, into a too sparing use of antiphlogistic means, especially purgatives. The appearance, and the terror of weakness, which so often masks the true nature of diseases, and deceives the physician into a timid, or erroneous practice, I feared had disarmed us of the best resources against the insidious adversary, whose triumphs we so often witnessed. The tonics we occasionally employed, though with cautious selection and guarded use, it seemed manifest enough, were at best unprofitable. I resorted to agents of this class at the time, with reluctance, having been long convinced, that such remedies are very generally ill-suited to febrile states, however urgently the failing energies of life appear to demand their sustaining powers. Upon the whole, I no longer doubted, that disguised as our cases of gangrene were, in the garb of debility, they would have been more wisely dealt with, on the plan of early, active, and persevering efforts, to promote all the secretions, gastral, hepatic, and intestinal, on the full and proper performance of which the balance of sensibility and action throughout the system, so greatly depends. The establishment of these, and the relief from constitutional irritation, which their restoration affords, becomes the most certain and speedy means of supplying the vigour of reëction, which their suspension or loss had mainly contributed to diminish or destroy. In a physiological sense, tranquillity, (or equality of action,) and tone, commonly stand in the relation of cause and effect.

It was not long before an opportunity was afforded of testing the truth or value of conclusions like these, in their application to the disease in question. After a total absence from the institution for seven months, gangrene reëappeared in our hospital 16th of January, 1832. On that day after having inspected most of the sores in the surgical ward, and found them in a satisfactory state of improvement, I was indulging agreeable reflexions on the state of this ward, contrasted with the spectacle it exhibited at the same period of the previous winter, when all gratulation on the subject was suddenly ended, by the discovery that the evil so much deprecated was actually present, and must be encountered anew. Of the last four cases which

came under examination, *three* exhibited unequivocal characters of gangrene fully established, and in a state of active extension. The relation to each other, in which the cases in question were found, was remarkable; these three patients occupied beds only a few feet apart, and ranging in the same line across the upper end of the ward, in the most open and ventilated part of the room. They were all chronic ulcers of the leg, two of them young men, with constitutions shattered by irregular life; the third a middle-aged man of pretty good general health. Gangrene had taken place in all these cases within the last twenty-four hours, but its characteristics were wholly different from the manner and form of invasion, by which the disease was represented the winter before.

A short description of the manner of attack, and the signs of the local affection, will best exhibit the contrast between the present, and the former cases of the disease, as it existed in the same ward twelve months before. The three patients in whom gangrene appeared on the 16th of January, had all been affected in a similar manner, in the course of the past night. They had each been attacked by chill and shiverings; violent in two of the cases, attended by feverishness, hot, dry skin, head-ache, pain of the back and limbs, parched state of the mouth, great thirst, some nausea, and total loss of appetite. Contemporaneously with these feelings of general disorder, pain, and a sense of burning heat, was experienced in the seat of the sore, with aching and numbness in the whole of the affected limb. The pain of the sore, and parts about it, was described as severe, and unremitting, seeming rather to be constantly increasing. The face of the patients was flushed; countenance anxious, and in two of them especially, the look expressive of extreme suffering both in mind and body. These two cases betrayed the sallow complexion mingled with dull red flush, and evident bilious tinge of the white coat of the eyes. The tongue in two of the cases was coated with mucus, and brown fur, and the edges reddened; in the third case, the tongue presented a singular aspect, it was clean, rather dry, without furring of any kind, but faded throughout, to a pale yellowish red, causing it to look nearly colourless, and as if partly translucent. The appearance of the gangrenous ulcers in each of the cases was as follows; the shape of the sore was changed; and from being longer than wide, in all the cases, had become completely circular, with thick, hard, and highly inflamed margins, giving the ulcer a deep cup-like form, and the interior of this crater or cavity was totally black. Here then we had the full characteristics of "hospital gangrene," as that disease is wont to appear, and is commonly described. These cases were all removed

immediately from the surgical ward, and placed in distant apartments unoccupied by other patients; yet by the 25th of January, or the space of one week from the occurrence of the disease to those first subjects, gangrene had supervened in eight other instances in the same hospital, and in one case, in the hospital of blacks. In all these additional cases, the manner of constitutional affection, and the local signs, were precisely as has been reported of the cases first discovered; the same sense of chills and rigors, feverish heat, head-ache, pain of the limbs, &c. and about the sore, the same marks of high inflammatory irritation, hard, elevated margin, increased size, circular development, and blackened cup-like cavity.

The three patients on whom this severe form of phagedena gangrenosa was found on the 16th of January, were Downs, Berry, and Elliott; the two former about thirty, the last near fifty years of age. Downs and Berry had constitutions broken by intemperance, and were in bad health; Elliott's general health had been moderately good for a year or two before his present illness. Downs had been long in hospital with extensive chronic ulcer of the leg, frequently irritable, and ill-looking, but never before phagedenic; his general state was better, and his sore more advanced in healing, just before the sudden invasion of gangrene, than for some months previous. The symptoms were less severe in this case than in the other two; only half the ulcer put on the phagedenic character, inflamed, thickened, cupped, and blackened. Constitutional derangement was less also; fever, pain, &c. lighter than in the others. Gangrene was defined in this case, slough formed and separated, suppuration restored, and patient convalescent in nine days.

Berry came into hospital lately, with ulcer on the leg, of moderate size, irritable, and in a bad state, but it had improved by rest and treatment. Gangrene was introduced in this case with great general disorder, rigors, and heat alternately, intense head-ache, parched mouth, thirst urgent, nausea, and loathing of food; mind anxious, countenance sallow and haggard. It was in this case the tongue showed the peculiar pale yellowish red hue, noticed before. Pain and heat in the sore were excessive, inflammation around it dark red, border of the ulcer very much thickened, form circular, and cup-like, interior black. Constitutional disorder kept up, and gangrene extended for many days; new parts became constantly involved in successive sloughing, until the integument and cellular texture of half the leg were peeled off, and the tibia exposed and blackened to some distance. The foot in this case was swelled and œdematous. On the twelfth day, circumstances were altered for the better; patient's

look and feelings improved, had rested the preceding night, pain in the limb abated, sloughing not extended since last dressing; appearances indicating probable cessation of gangrenous progress. This issue was realized; fever subsided, sphacelation stopped, and the dead textures were cast off in a few days, leaving an ulcerous surface of great extent, but well coloured, and suppurating properly. The sloughs were all separated by the eighteenth day from commencement of gangrene, and improvement in every respect has gone on steadily since. As convalescence proceeded, the singular appearance of the tongue was gradually exchanged for a natural red colour.

Elliott's case exceeded both the others, in the signs of suffering and danger, as well as in duration and difficulty of management. The febrile invasion was severe and prolonged; coldness, shiverings, and heat, continued through the night of attack; had sat up in bed most of the night, incapable of rest; head pained violently. On the next morning great nervous disorder, countenance distressed, mind anxious and irritable, respiration quick, hard, and straining. Heat and pain about the ulcer, and aching through the limb were almost intolerable, patient held the leg grasped in the hands to blunt pain by pressure. Before the present attack, the ulcer on Elliott's leg was small, and so little inconvenient, that he was about daily, engaged in some duties in the institution, especially whitewashing, a business he had followed in the house for a long time. The state of his sore now was greatly altered, the surrounding integument was excessively inflamed, thickened very much, hardened, and near the edge of the sore dark-coloured, with a deep red flush some distance around. The size of the ulcer was enlarged, and its figure rounded, with the centre depressed and blackened; the circular cup-like character of acute hospital gangrene. Some general swelling of the leg, with a degree of diffuse œdema, were apparent, even at the first in this case; circumstances which occurred late, and only partially in the other two cases; the œdema was not subcutaneous merely, but extended to the deep cellular textures, giving to all the soft parts of the leg the dough-like feel. The spread of gangrene in this case was gradual; sloughing extended on every side, constantly affecting the circular figure, until it nearly surrounded the leg, and reached from a little below the knee to the ankle. Partial definition commenced in the sore about the eighteenth day, but it was not till the twenty-third, that the parts every where around the ulcer appeared free from all remains of gangrenous inflammation. The symptoms here were so violent in the beginning, and for many days followed by such extreme prostration, that the final recovery of the patient was an

agreeable disappointment of the expectations, with which we looked to its issue.

Of eight other cases of gangrene which occurred in the surgical ward, within a week from the discovery of those just described, the same characteristics, it has been already remarked, were presented in the latter, as in the former instances; all exhibited like symptoms, general and local. One of these additional subjects of gangrene, S. Gordon, came into hospital six weeks before, with acute inflammation of the lungs; he had also ulcer of the leg, which became unhealthy during the fever of pneumonia. The pneumonic affection was cured, and the ulcer was healing rapidly, and had lessened to the size of half a dollar, when the man contracted an eruptive disease, prevalent in the institution. During the fever which accompanied this new disorder, the ulcer of the leg inflamed, and in a few hours passed into phagedenic gangrene. Gordon was ill for many days, but got safely through his eruptive disease, and on its decline, the sphaceloid state of his ulcer was also arrested, making a period of ten days from the beginning to the end of gangrene development. There was a second attack two weeks afterwards of phagedenic inflammation and sloughing in this man's sore, but more partial than the first, and corrected in a few days, since when his convalescence is steady.

Patrick Quain became the subject of phagedenic gangrene about the same time with Gordon. Quain had just recovered from bad compound fracture of the leg, which had left a small superficial sore, nearly healed. He was attacked as in the other cases, with chills, fever, head-ache, and other signs of general disorder. His sore at the same moment became very painful, inflamed, tumefied, enlarged, and deepened, putting on the circular form, with blackened cavity. The characters of the sphaceloid affection, and the amount of general derangement in the present instance, appeared to threaten early bad consequences, if not soon amended; an object which was accomplished with less difficulty than had been anticipated. Constitutional disorder was quieted, and inflammation, &c. about the sore subdued in seven to eight days, and the ulcer has since become nearly well.

Thomas Farrady was brought into hospital in the last week of January, in the low stage of typhoid fever, with symptoms of gastro-enteric phlegmasia, and cerebro-spinal arachnitis; delirious, subsultus tendinum, and tremors of the upper limbs; momentary consciousness when roused, pulse quick and small. He was put into the surgical ward on account of excessive swelling and inflammation of the leg and nates of the right side, phlegmenoid erythema, œdematose, or diffuse cellular inflammation. This man's state seemed desperate on

admission, but by soothing, general treatment, (mainly endermic,) free scarification of the inflamed parts, and deep incision for the discharge of matter, as soon as fluctuation could be discriminated, his vital functions were reinstated, and convalescence proceeded favourably. When nearly recovered from the fever, &c. with which he came into hospital, Farrady contracted the same eruptive disease,* by which Gordon was then affected. The new febrile incursion gave a fatal shock to his strength, only partially recruited from his late illness. On the second day of the eruption, the leg, which had lost all the former inflammation, swelled, became painful, and the integuments around the incision turned black and gangrenous. The mortification was not confined to the edges of the incision, but spread from that point as a centre, so as to define a circular form, as in all the other instances. The man became comatose, and died on the third day.

* The eruptive disease by which these two men were affected, had been many weeks in the house, where it exhibited a curious and interesting diversity of form and character. In the same room, and presumptively from the same source, appeared simultaneously, cases of the disease corresponding in character to all the varieties of varicella; the lentiform, conoidal, globate, and corymbose, to which, if allowed such innovation, I would add, the bullous or crystalline. Mixed with these, other cases might be seen presenting the mimic, or as it is termed, modified forms of variola, known under the denomination varioloid disease; and more commonly still, cases answering completely to that anomalous eruption moderately defined variola crystalli, the spurious variola, water pock, or bladder pock of the old writers.

In the history of epidemics, I knew nothing more interesting, or more uncertain, than the true nature of the eruptive disease, or diseases, if more than one in kind, which at the present moment manifests itself under so great diversity of forms in many parts of this country, which has shown itself at the same time, or in quick succession, in the south and the north, and at numerous intermediate points, which, wearing often the livery of apparent close relationship to small-pox, respects not the proofs of prior occupancy by that disease, nor is repelled by the preventive pretensions of its vaccine substitute. Of its utter disregard for both, the instances have been numerous, under my own observation, and while it has retained its own proper characteristics, when occurring to the variolated, the vaccinated, and the wholly unprotected, it is a curious fact, that in the latter instances, it has often worn a milder aspect, and more benignant nature, than when supervening to the former. Being engaged in preparing to report on the characters of this anomalous eruptive disease, as it ran its course through the Baltimore Alms-house, the present reference to it is designed merely to explain what is meant by the disease with which gangrenous phagedena is stated to have been sometimes complicated, and to which, as a casual exciting cause, the latter appeared in one instance to owe its existence.

Richard Douglass had been long in hospital on account of large ulcer of the leg, which was slowly advancing in cure, when he also became the subject of exanthematous fever, like that of Gordon and Farrady. On the fifth day of eruption, this man had a succession of chills, increase of fever, head-ache, &c. The ulcer at the same time became painful, inflamed and incavated, by tumefaction around its margin; the centre and surface of the sore turned dark, and in a few hours quite black. Active constitutional means, antiphlogistic, allayed the violence of the symptoms, both general and local, and checked the spread of gangrene so promptly, that the patient was convalescent, and the ulcer again in a good state by the ninth day.

There were five other cases of phagedenic gangrene, corresponding in time, and developed under the same influences with those above reported. These it is unnecessary to individualise in description; the symptoms are alike in all; the same characters of general disorder, and like manner of local degeneration, as sketched above. These also ended favourably, making the satisfactory result of only one death, in the total of gangrene cases, twelve in number.

The treatment of the disease this winter was simple; the same in all the instances, with only the modification of less activity, or perseverance, according to circumstances; the plan was strictly antiphlogistic throughout. On the invasion of fever, with the local signs characteristic of this affection, nearly every case was first vomited freely, by ipecacuanha in full doses, worked off with weak chamomile infusion. Where pain was urgent, and nervous-irritation great, the emetic was followed by the warm bath; after the bath, calomel was exhibited, in liberal quantity, combined with Dover's powder, pure opium, or extr. hyosciamus sufficient to ensure quiet or sleep. This dose was carried off by a solution of purgative salts, with addition of syrup of rhubarb, and the administration of the aperient renewed until numerous, free evacuations were procured. In some cases spontaneous diarrhœa had supervened before, or at the same time with the attack of fever, pain, &c. this did not alter our course; we still washed out the stomach by a mild emetic, and gave the mercurial anodyne, followed by the salts, &c. as though the bowels had been unaffected; the spontaneous purgings were ill looking, muddy and mucous, and required to be altered. In the general only the first dose of calomel was large, ten and twelve grains; every night after, during the fever, calomel was repeated, but in doses of four and five grains, sometimes less, and still guarded by the anodyne, opium, or hyosciamus; the solution of salts, followed regularly next day, to the extent of free aperient influence. We perceived no debilitating con-

sequences from the repetition of saline purgatives daily, carried on even for many days; on the contrary, the patients themselves were conscious of bettered feelings, with bowels well, opened by this means. A weak charge of antimony, or some spirit of niter, were occasionally added to the aperient solution, where from some excess, or defect of excitement, a slight nauseant or gentle stimulant might aid action by the skin. The general warm bath was seldom employed more than once or twice in the same case, and then in the first periods of febrile incursion; but the pediluvium was repeated daily, where the constitutional disorder was greatest or most prolonged.

The antiphlogistic means were not always restricted to emetics, with mercurial and saline purgatives. In the first case of gangrene invasion accompanied by arterial excitement enough to fill the vessels well, and give moderate soundness, with some tone to the pulse, the lancet was the earliest resort, and blood was taken as far as prudence allowed. In these cases the emetic was omitted, the mercurial and saline purgatives were employed as in other cases. We had no cause to regret this practice; every patient we bled, and we bled all who had action to justify the experiment, recovered more promptly, and with less local lesion than the others. The beneficial effects of blood-letting were particularly obvious, and immediate, in Douglass' case. On the fifth day of a nearly confluent eruption, secondary fever was ushered in by long successive rigors, with universal tremor, and at the same moment acute phagedenic inflammation was revealed through the whole extent of his large ulcer; its margin tumefied and surface blackened. In the midst of these signs of febrile exasperation, and great nervous tumult, he was directed to be bled to the amount of twelve or fifteen ounces. While the blood was flowing, the rigors and trembling subsided entirely, the patient's mind tranquillized, and he acknowledged himself to feel decidedly better. The local mischief was likewise completely stayed; gangrene proceeded no further, and a superficial slough from the surface of the sore, was all the injury the part sustained. Bleeding seemed also in this instance to exercise a manifest controul over the course of the exanthematous affection; a crowded vesiculo-pustular eruption, about half matured at the moment of venesection, advanced no more, but entered abruptly into a state of rapid desiccation. Swelling of the face and limbs, which were considerable at the time of bleeding, subsided at once, fever ceased, and the patient's recovery was completed in a few days.

In one only of all the cases of gangrene treated this winter, did we depart, at any time, from the purely antiphlogistic plan; modified in force and continuance according to circumstances. Elliott's case,

the most violent and prolonged of all we had to deal with, reduced him so low, that something seemed necessary to sustain due excitement of the nervous and vascular functions, and he was kept some days on the combination of extract of quinine, camphor, and hyosciamus, in the form of emulsion. The mercurial alterative, and anodyne, were still repeated nightly, and his bowels kept soluble with salts and syrup of rhubarb. Salivation was produced late in the course of treatment, and the mercury then withheld. Ptyalism was moderate, and the constitutional impression probably salutary, as improvement in the ulcer was more decided afterwards than before.

The topical treatment of the gangrene cases of the present season, like the general management, was simple and uniform. The means were few and little varied; regularity and care of employment was more regarded than number or diversity of applications. In the first moments of pain, swelling, and inflammation about the sore, mitigation of these symptoms was consuted by fomentation and large poultice, favoured by the quieting influence of a liberal anodyne with calomel, as noticed under the general treatment. At the next dressing, after cleansing with warm soap ley, the lunar caustic was applied freely around the margin of the ulcer, the sore covered with lint wetted with chloride of soda diluted two-thirds, and over this a light poultice of carrots, boiled and bruised; if the part was very painful, tinct. of opium was dropped on the lint after wetting with the chloride. In cases where the margin of the ulcer was intensely inflamed, tumefied, hard, and high-coloured, free scarification was made around the sore, and the bleeding promoted by warm water, before the caustic, &c. were applied. The caustic was renewed at every dressing, with the chloride on lint, and poultice as above stated. When signs of definition, or separation by sloughing appeared in parts of the ulcer, the moistened lint was still applied, but with the chloride more diluted, and then an additional covering with lint spread with an ointment composed of acetic acid and chalk, linseed oil, and oxyd of lead, or in place of this, the turpentine ointment, which, with the carrot poultice, was continued until the sloughs were cast off.

This was our local plan in the first cases of the disease, and we had reason to be pleased with its effects; it appeared constantly to repress irritation in the part, and thus coöperated in the general design of treatment. But as the lunar caustic, however freely employed, appeared in certain instances insufficient to suppress completely the peculiar morbid action in the sore and neighbouring parts, we deemed it adviseable to try some means of promptly extinguishing altogether inordinate organic sensibility of the part; in other words, destroying entirely, to a limited space, the susceptibility or life of

the textures so changed and degenerated as to be incapable of healthy reaction. For this purpose we resorted to the arsenic, used in the manner recommended by BLACKADDER. The ulcers were washed well with a weak solution of potash, and dried, then covered with dossils of lint wetted with Fowler's solution reduced one-half; the wetting constantly renewed until the whole surface covered was converted into an insensible slough. When the eschar was completely formed, which was commonly effected* by three or four applications of the arsenic, the whole was dressed with the lead or turpentine ointment and poultice, until the slough was thrown off, and the same dressing, the ointment and poultice, continued through the after-stages of filling and healing. This plan, unsuccessful as far as tried in the mildew mortifications of 1831, was uniformly of fortunate influence and issue in the more inflammatory form of sphacelus—the phagedena gangrenosa of the present season. After a few trials of the topical treatment by the arsenic, we came to regard it with great confidence, as the best and most certain counteragent of this species of gangrenous inflammation. In all the instances of its employment, comprehending a majority of the cases treated, a decided stop was put to the spread of the local disease as soon as the artificial slough was formed, a result generally obtained in two to three days. Whether our greater success with this mean, on the present occasion, was owing to some diversity or modification of character in the disease itself; to a more free and complete employment of the remedy; or to a more judicious plan of general treatment, and on this account a constitutional state better prepared to profit by the impression made locally, cannot be certainly discriminated. To myself, the latter appears the more probable explanation of the difference in the result.

It would be no less useful than satisfactory to be able to trace with precision affections like those described in the preceding account to their true causes and means of extension. But the agents by which epidemics, or endemics, whether contagious, infectious, or meteorations, are produced and propagated, are known only inductively through their effects—their essential nature and attributes forever elude detection. The reason of this imperfection in our knowledge is obvious, and leaves little hope of better success, or greater certainty in future investigation.

To what special source we were to attribute the breaking out of gangrene, as it is reported to have appeared in our wards in January of the present year, was a question which could be determined only on conjecture, always obnoxious to doubt, and liable to error. The circumstances under which the first three cases were found, seemed

to imply either that place and situation in the ward occasioned peculiar influence on those individuals, or else, that casual gangrene development in one of them became the cause of rapid contagious impression upon the others. The three lay only a few feet apart, and in the same line across the ward; gangrene had supervened to all those cases in the course of one night, and at the moment they were affected, nothing of the kind, nor any obvious tendency to it, appeared in any other ulcer case in the same ward. The probability that the irruption of the disease was owing to locality in the ward, or what is the same, to peculiar concentration of some hospital miasm in that part of the room, is contradicted by the fact, that those first subjects of the affection were situated in the most open and ventilated portion of the apartment; they occupied the first range of beds in the ward, remote from the part of the room where the worst cases of sores and injuries are commonly placed, and enjoyed the benefit of fresh air, from frequent opening of the doors of the ward by persons entering or going out. Those individuals, in short, were in the situation which we had hitherto regarded the best, the room offered for purity of air, and had always chosen, when we deemed it necessary in any case to select a position for a patient to whom that advantage was particularly desirable.

On finding three cases thus placed in close relation to each other, similarly and simultaneously affected, and at the moment the only cases of the kind in the room, the suspicion of contagion, or communication from one to another, might readily present itself as an explanation of such a coincidence, and for an instant we doubted whether we should not account for what had happened by this interpretation. The account and circumstances of Elliott's attack, the last examined, and the worst of the three cases, was calculated to dispel all idea of contagion as to himself, and supplied by inference the same negative testimony in regard to the others. Downs, Berry, and Elliott, it has been stated, were all found with phagedenic gangrene on the 16th of January, and were all attacked by this affection in the course of the preceding night. The two first were confined to bed in ward, and had been so for some time; of course their disease was developed where they lay—in hospital. But Elliott's case was very different; he was not only not a hospital patient, but had not been even temporarily in hospital for many months; he had only a trifling ulcer of the leg, which he attended to himself; was constantly employed in some occupation about the institution, whitewashing chiefly, and eat and slept with the working class of inmates of the house. He was attacked on the night of the 15th of January, with the symptoms described in the account of his case, and had been brought into

hospital on the morning of the 16th, with phagedenic gangrene fully formed before entering the ward.

In the other cases which occurred within a week after its appearance in those first instances, there was nothing to indicate the spread of the gangrenous affection by personal influence or contagion. The additional cases were found dispersed about the ward, detached and remote from each other, with many intervening ulcer cases, wholly free from participation in the disease. A number who were subjects of gangrene last winter were still in the ward; some of them with ulcers yet unhealed; these all escaped the disease in its late partial prevalence around them. The nurse of the ward, who devoted himself assiduously to the care of the gangrene patients this season, suffered two severe attacks of the endemic sphacelus of last winter, and he too remained perfectly well, though he has a small ulcer of the leg often in a fretted state by constant exercise. While the disease was present in the surgical ward this season, one case of gangrene, of the same species, occurred among the patients in the hospital of blacks; but although this hospital was crowded at the time, the affection spread no further. There was, in like manner, a solitary case of phagedenic gangrene, arrested at an early stage, supervening to chronic anthrax of the leg, in the infirmary for white females.

There was one circumstance which struck me forcibly as probably connected with the development of gangrene in our hospitals this winter; yet, of its tendency, or manner of influence, there is no other evidence than the relation in time between its occurrence and the breaking out of the disease; together with the cessation of the latter, when the circumstance or condition alluded to no longer existed. After a season of premature and long-continued cold, unmitigated by even temporary remission of its severity, there was a sudden and great relaxation of the weather in the second week of January. For nearly a fortnight the days and nights were uncommonly warm for the period of the year, and at one part of this time the atmosphere was constantly calm, warm, and hazy, as we are accustomed to have it in that bland and uniform autumn weather distinguished in this country by the term *Indian*, or second summer. The mornings were warm, and the air thick or smoky, with very little of the dampness which constitutes fog. It was after the third morning of this description, gangrene was found among our patients, (as reported,) 16th of January. The warm, smoky mornings lasted, with slight variation, for near a fortnight, and in all that time new cases of this disease were successively produced. From the first week of February, since when the weather has been clear and mild, cool and wet, or clear and cool, there has been no new case of gangrene in all our wards.

A Summary of Medical and Surgical cases Treated in the Baltimore Alms-house, from the 1st of May, 1830, to the 30th of April, 1831.

DISEASES.	Admitted.	Cured.	Relieved.	Died.	Remaining.
Apoplexy - - - - -	2			2	
Aneurism, aortal - - - - -	1				1
Arachnitis, cerebro-spinal - - - - -	10	6		4	
Asthma - - - - -	7		7		
Abscesses, external, various scat - - - - -	20	15		3	2
Arthritis and arthrocase - - - - -	21	18		1	2
Anthrax, acute and chronic - - - - -	26	19		1	6
Ague, irregular and complicate - - - - -	102	95			7
Bronchitis, acute and chronic - - - - -	23	14		2	7
Burns and scalds - - - - -	18	15		3	
Cerebritis - - - - -	4	3		1	
Colitis, acute and chronic - - - - -	22	13		3	6
Cynanche, tracheal, laryngeal, and tonsillar - - - - -	26	25		1	
Catarrh, serous, mucous, and pneumonic - - - - -	116	111		2	3
Cholera infantum - - - - -	32	18		14	
Cholera morbus - - - - -	8	7		1	
Carcinoma, uteri - - - - -	9			6	3
Coxitis, morbus coxarius - - - - -	6		4	2	
Contusions, severe - - - - -	28	22		1	5
Cataract - - - - -	4		2		2
Dropsy, general - - - - -	37	17		16	4
Dysentery - - - - -	75	66		7	2
Diarrhœa, various species - - - - -	65	48		9	8
Delirium tremens - - - - -	48	43		5	
Dislocations - - - - -	6	6			
Dead, or dying when admitted - - - - -	10			10	
Enteritis, acute and chronic - - - - -	27	20		5	2
Epilepsy - - - - -	15	2	6	1	6
Erysipelas - - - - -	17	16			1
Ecthyma, cachectica - - - - -	6		4		2
Erythema, severe symptomatic - - - - -	9	8		1	
Fever, intermittent and remittent, season - - - - -	145	135		2	8
—, gastral or mucous - - - - -	32	27		1	4
—, inflammatory, idiopathic - - - - -	25	22			3
—, typhus, gastro-enteric - - - - -	46	36		7	3
—, puerperal - - - - -	7	7			
Fractures, simple and compound - - - - -	15	10		1	4
Fistulæ in ano et perineo - - - - -	4	2		1	1
Gastritis, acute and chronic - - - - -	29	27		2	
Gangrene, endemic and traumatic - - - - -	44	19		20	5
Gangrenopsis, sphacelus of cheek and jaw - - - - -	6	4		2	
Gonorrhœa - - - - -	27	23			4
Hydrothorax - - - - -	15	11	2	2	
Hydrocele - - - - -	2	2			
Hernia, serotal - - - - -	6		6		
Hepatitis, acute and chronic - - - - -	28	22	2	1	3
	1231	964	33	140	104

DISEASES.	Admitted.	Cured.	Relieved.	Died.	Remaining.
Brought over - -	1231	964	33	140	104
Hysteria, puerperal - -	8	6		2	
Hæmoptysis, dangerous or violent - -	6		6		
Hæmorrhage, uterine - -	7		7		
—, various - -	20		19	1	
Icterus, general - -	9	9			
Iritis - -	3	3			
Insania, mania et melancholia - -	36	6	11	6	13
Inflammations, severe superficial, various scat - -	31	31			
Lithiasis, lithia arenosa - -	9		9		
Leucorrhœa, excessive - -	33		24		9
Mælena, icterus nigra - -	4		2	2	
Nephritis - -	4	3		1	
Neuralgia, severe, various scat - -	28	20	4		4
Ophthalmitis and psorapthalmitis - -	29	16	9		4
Otitis, acute - -	4	3		1	
Pleuritis, acute and chronic - -	47	26	10	6	5
Pneumonitis, acute and chronic - -	56	38	11	7	
Peritonitis, acute and chronic - -	15	13		2	
Paralysis, various forms - -	30		17		13
Phymosis and paraphymosis - -	11	11			
Prolapsus recti et uteri - -	6		6		
Pertussis - -	18	18			
Phagedæna oris - -	15	12		1	2
Psoriasis inveterata - -	7		7		
Porrigio, various forms - -	30	24			6
Pernio - -	16	14	2		
Plithisis, tracheal and tubercular, incipient —, matured on admission - -	12 89			85	12 4
Rheumatism, acute and chronic - -	86	62	12	1	11
Rubcola - -	8	8			
Roseola - -	10	10			
Scarlatina - -	42	42			
Scrofula, various forms - -	43		24	5	14
Spinitis - -	29	9		18	2
Splenitis, acute and chronic - -	40	22	12		6
Syphilis, various forms - -	67	54		1	12
Strictures, urethra and rectum - -	8	5			3
Tetanus - -	1			1	
Temulence, prolonged intoxication - -	92	91		1	
Tympanitis, symptomatic - -	12	11		1	
Tumours, various characters - -	21	20		1	
Ulcers, various forms - -	115	84		2	29
Varicella - -	4	4			
Vaginitis, acute and chronic - -	22		22		
Varix, venous - -	16		8		8
Wounds - -	7	6		1	
	2429	1625	255	286	263

• *Baltimore, March, 1832.*

No. XIX.—May, 1832.

ART. VI. *External Iliac Artery successfully Tied.* By JAMES C. HALL, M. D. of Washington City.

THE feasibility of tying the external iliac artery is so well established, that the following operation is deemed worthy of record, only from its having been performed under circumstances extremely unfavourable to success.

Oct. 5, 1831.—I saw George Snow, a labourer, age thirty-five, of intemperate habits; now confined to his bed; reduced in flesh; haggard in appearance; digestive functions impaired. He relates, that three months since, in lifting a heavy burden, he felt something give way in his thigh, and in two or three days afterwards he noticed a small tumour in the upper and inner part of the limb, and that it has unremittingly continued to increase. At this time the left thigh is four times by admeasurement the size of the other, and the leg, ankle, and foot are highly œdematous and varicose. Upon the anterior part of the thigh is presented a tumour, extending from Poupart's ligament, and the superior spine of the ilium, one-third or more of the way downwards, elastic, resisting and strongly pulsatile; it is of a dark bluish colour, and this not truly pointed; has a prominence when the impulse of the blood is forcibly felt, and produces the impression that here the parietes are very thin. The pulsation is evident on a very wide surface, and by means of the stethoscope is discovered, high up in the iliac fossa, where also there is much fulness. Here two symptoms give the case a formidable and almost desperate character, rendering it very doubtful whether the rupture in the artery has occurred above or below Poupart's ligament; but as the pressure of the finger upon the iliac artery arrests the pulsation, and as the prominence of the tumour is below the groin, I feel authorized in thinking that the disease is diffused aneurism arising from a rupture of the femoral artery; that the iliac artery is sound, and may therefore be safely tied. This day the temperature of the affected limb is 84° between the toes, and 86° at the inner part of the thigh, that of the sound limb is 94° and 96° at the corresponding points. There is a general numbness of the thigh, with a severe and constant pain about the knee; pulse 90.

Oct. 6th.—Pulse 114; in other respects no change.

Oct. 7th.—DRS. DACOES, WARFIELD, and COLLINS, examined the case, and concurred in opinion with me that the operation of tying the external iliac artery gave the only hope of escape from an early death.

This operation I proceeded immediately to perform in the mode recommended by Sir A. COOPER, but as the processes of the ilium and the line of Poupart's ligament were completely obscured by the swelling, the location of my incision was necessarily uncertain. It commenced at a point opposite to, and distant from the superior spine of the ilium about one inch, and extending with a gentle curve downwards, terminated on the outer side of the external abdominal ring. The artery was found, and proved to be sound, but great difficulty was experienced in passing the ligature, owing to the very great toughness of the substance connecting it with the vein. The needle in Physick's artery forceps twisted and broke in attempting to pierce this fascia, and finally I was compelled to pass a knife handle under the artery upon the extremity of which I cautiously made an incision. With Gibson's instrument I then passed the ligature, which was tied singly. Four other vessels were tied. The peritoneum was not injured.* The pulsation in the tumour immediately ceased, but there was no perceptible diminution in size. The wound was dressed simply; the whole limb invested in carded cotton, and laid in a flexed position.

Three hours after operation, pulse 120. Temperature of left limb 85°; of the other 91°; has some griping near the wound; limb numb; pain at knee severe, insensible to friction, general aspect natural; at one o'clock A. M. slight bleeding at nose; shortly after slept.

Oct. 8th.—At 7 A. M. complained of a "heaving" sensation, which was relieved by a mouthful of weak toddy. At 11 A. M. feels well; aspect natural; no appetite; no thirst; tongue clear; pulse 116. Pain in knee diminished, but yet severe, circumference on tumour the same; other parts of limb much diminished; veins moderately full, temperature in both limbs 87°. At 2 P. M. great agony in limb, which is affected in succession with the sensations of hot embers being upon it, of the pouring of hot water, and the pricking of many needles; complains of nausea and giddiness.

Oct. 9th.—Limb much reduced, but not the tumour; numbness

* The great strength of the living peritoneum is proved by the following singular accident. Mr. Rodney, age twenty-five, sitting on a boy's sled, rapidly descended a frozen surface, and came in contact with a blunt stick, an inch broad and half an inch thick. It entered by the side of the rectum and penetrated six inches. He withdrew it himself; there was a gush of blood; he fainted and died in thirty-one hours. I did not see him till after death, when upon examination I found that the stick had passed between the rectum, peritoneum and sacrum, and had wounded the primitive iliac just at its bifurcation. The peritoneum was not wounded at all.

ceased; pain much relieved; pulsation *thought* to be discovered in the anterior tibial artery. Wound nearly closed through its whole extent, having only a little pus and flakes of lymph upon its edges.

At 6 P. M. after the operation of oil taken in the morning, he complained of a sensation in the abdomen, "like that of a 50lb. weight going up and down," and upon the hand being applied, the aorta could be felt strongly beating. At 10 P. M. laudanum was given to arrest the operation of the oil and calm his irritation.

Oct 10th.—Pulse varied from 100 to 116; temperature nearly equal in both limbs; applied frictions and warm envelopes to remove coldness of leg.

Oct 11th.—Beating sensation above wound.

Oct. 12th.—Not so well; wound sore; "much beating" and throbbing in middle of leg."

Oct. 15th.—His bowels disordered; dark and foetid stools. Ordered calomel and opium.

From this time no change worthy of record occurred. The œdema rapidly disappeared, while the tumour formed by the coagulated blood very slowly decreased under the use of stimulating frictions. The pain of the knee, depending probably upon pressure made upon the nerves, could only be alleviated. The wound remained generally in a healthy condition, though the healing process was not as rapid as at first promised. Upon the 22d day the ligature came away. The patient continued to do well in every respect, and though the limb is not entirely reduced to its natural standard, no doubt remains that it will be perfectly restored. To the assiduity and skill of Dr. BARRY, who attended during the after-treatment, I am much indebted for the happy termination of this case.

ART. VII. *Observations on Sedation.* By HUGH L. HODGE, M. D.
one of the Physicians of the Philadelphia Alms-house Infirmary, &c.

IN the following essay, I propose to make some remarks on a peculiar state of a part, or of the whole body, which I would designate by the term *sedation*. This expression is adopted, as the state alluded to, is the result of any *sedative* cause; and, although not actually new in medical history, yet it has never been regarded distinctly as a morbid element, and has universally been confounded with debility, even by the most accurate and scientific pathologists.

Regarding the science of medicine as still in an embryotic condi-

tion, and as demanding imperiously from the vast accumulation of facts and opinions which now exists, that its fundamental principles should be carefully investigated, and if possible, established, I would exemplify the nature, causes, dangers, and treatment of sedation; exhibit the distinction, essential as to nature, however difficult always to describe or illustrate, which exists between sedation and debility, and insist on the practical importance of a full and accurate acquaintance with this morbid element in almost every disease to which the animal economy is subjected. In executing this design, complete success is by no means anticipated; the subject is too intricate, and too imperiously demands great philosophical acumen, and extensive physiological knowledge. The illustrations given, have however been acquired at the bed-side, and the opinions advanced, are the result of a painful experience, that principles heretofore inculcated in reference to this subject, are either defective or absolutely false.

Sedation stands directly opposed to irritation. As the latter expression is employed to designate a morbid excitement, so sedation is a morbid depression—the phenomena of life being depressed below their healthy standard. It is a diminution of action, whether organic or animal.

It is to be distinguished therefore from asthenia or debility, in which there is a diminution or loss of strength. Perhaps vital strength or power, (for the words are synonymous in medical language,) may be defined with sufficient precision, the capability of resisting or enduring, of resisting injurious causes, or of enduring healthy or diseased actions. Hence, all authors, whatever their medical creed may be, continually allude to the strength, (vital,) of the tissues, the arteries, muscles, stomach, &c. and also to that of the whole man, when they say his strength fails, his powers are exhausted, his vitality is diminished, &c. Excitement or irritation is, an increased manifestation of the phenomena of life, in medical language, increased action, and may exist with much or little power. The strength or power of any tissue should therefore be distinguished from irritation, or increased action; to say that power and action are the same, is identical with declaring that two Arabian coursers have the same strength, because they have the same speed for a given distance. It is well known, that the strength of one individual may be exhausted before that of his fellow, manifesting the same degree of excitement. Hence *debility*, or the diminution of power, is not to be confounded with sedation, or the depression of action: an animal may be very strong when not in action, and very weak when much excited. What is true of the whole body is true of its component parts or tissues.

The nature and importance of these distinctions, and the existence of sedation and debility, separately, or in combination, will be more clearly manifested in the course of the succeeding illustrations of the causes, nature, and consequences of sedation.

The phenomena of organic or animal life, or both, are diminished or suspended in sedation. This is well illustrated in syncope arising from severe pain, or from some moral cause, as joy, surprise, fear, &c. We observe less action than natural in the heart, arteries and capillaries; of course, in all the organic functions, some of which seem to be completely suspended; while the depression in the brain and nerves, the organs of animal life, is evinced by the failure of intelligence and sensation, as well as by the universal relaxation of the muscular system. So also when any superficial portion of the body is exposed to intense cold, it becomes pale, bloodless and numb, and eventually, totally devoid of sensation and organic action, being actually frozen; maintaining its vital power, to a certain degree at least, yet having all the phenomena of life wholly suspended.

The *causes* of sedation are direct or indirect. The *direct causes* are,

1st. *Abstraction of accustomed stimuli.*—Caloric is a universal stimulus, essential for vital phenomena; its abstraction, therefore, in other words, cold, is attended by a proportional diminution of the phenomena of life in all the tissues immediately and directly concerned. Hence when the whole system is affected, there is torpor of the brain and nerves, of the heart and vascular system, as is remarkably and pertinently exhibited in hibernating animals. The blood is another universal and natural stimulus to vital actions, and all are familiar with the change which directly ensues on its evacuation,* in all the functions of the economy. Similar effects result from profuse evacuations of any of the fluids, derived from the blood; as serum, mucus, saliva, bile, pus, &c. &c. Oxygen is the natural stimulus to the respiratory organs, the diminution of supply is injurious; the suspension immediately fatal. The loss of food is succeeded by languor of body and of mind, and so of all the physiological or natural stimuli.

2d. *Sedatives.*—It has been much disputed whether we possess any direct sedative agent, as something analogous to excitement, either precedes or accompanies the depressing influence of this class of agents. Without discussing an objection which seems to be hyper-

* Of course when blood and other fluids are evacuated, there is not only a diminution of action, but also an actual loss of strength; an example among others to be hereafter alluded to, as exhibiting the coëxistence of sedation and debility.

critical, it is sufficient to remark, that numerous agents will very speedily depress vital action, so as to endanger or destroy life, and hence, for all theoretical and practical purposes, are truly sedative. Not to mention cold, already alluded to, under the first division of direct causes, prussic acid, digitalis, opium, cicuta, and other narcotics, as also certain mental passions, as grief, fear and despair, may be adduced as examples. There is much reason for supposing that many of the irrespirable gases, as carbonic acid, sulphuretted hydrogen, and also the effluvia from dead animal or vegetable substances, (idio, and koino miasmata,) have not only an indirect influence by diminishing the proportion of oxygen inhaled, but a direct sedative agency on the tissues concerned.*

3d. *Mechanical causes* often also exert a direct sedative influence on the tissues injured. Thus contusions not unfrequently occur of that degree of severity which will diminish or suspend the functions of a part, without any appreciable injury of structure, with no *organic* derangement. It is now well established, that concussions of the brain may even prove fatal where the knife of the most accurate anatomist can reveal no change of structure. The same observation is true in concussions of the stomach, of the lungs and heart. In organs and tissues of less importance, there may be not only a diminution, but in some cases, a total suspension of organic and animal actions without actual death. All cases of paralysis afford daily examples of sedation; the organic life being manifested in less intensity proportionate to the sedation of the injured nerves on whose influence it is dependant, in the perfect animals at least, for a physiological or normal stimulus. The following example from Boyer, among others which might be adduced, shows that apparently all action may be suspended, yet vital power not only remain, but be again manifested under appropriate circumstances. "DE LA MORTE relates the case of a boy, whose right hand was so paralysed, (asphyxié is the more appropriate French word,) by a blow received on the external part of the forearm, that it appeared as dead, (comme morte,) for ten days; but at the end of this time, the heat returned

* It is stated that sulphuretted hydrogen is fatal, when applied to the surface of the body and not inhaled, as dogs immersed in this gas while their heads were kept in a pure atmosphere perished.

† Using this word in the English, not in the French sense. With the members of the Parisian school, *organique* refers to functional as well as structural derangement, any disturbance of action is a disturbance of the organic molecules, and hence termed *organic*.

by degrees, the pulsation of the arteries was again perceptible, and the hand was restored to its natural state." Boyer describes these examples of local asphyxia as cases "in which the heat, the sensibility, the motion, the beating of the arteries, in fine, all the phenomena of life, after having appeared to be annihilated for many days, are gradually reëminated and resume all their vigour."* Another illustration of an extreme case of sedation, or asphyxia, showing at the same time, its compatibility with the existence of some degree of vital power, is afforded, where portions of the ear, of the nose, or of a finger, which have been completely severed from the body for some twenty or thirty minutes, so as to resemble dead matter, being in the language of one report respecting an amputated finger, as pale and cold as a wax candle, have been restored to their former situation, and under suitable treatment, have again manifested all the phenomena of organic, and, it is said, even of animal life. These are extreme cases of sedation from mechanical causes, but every one is aware of the effects of moderate degrees of contusion with or without injury of structure, of the pallor and numbness which precede the redness and pain, symptoms of succeeding irritation.

The *indirect causes* of sedation are probably the most numerous, as

1st. They include all the various and complicated *irritations* to which the human system is liable; for it is a general fact, liable to some exceptions, that irritation in one tissue or organ abstracts excitement from other tissues or organs. They hence occasionally suffer from this defect of excitation, (sedation,) thus indirectly produced by local irritants. Every practitioner is familiar with examples of this character; hence the coldness and bloodlessness of the extremities in acute inflammations of the brain, lungs, stomach, &c. &c.; hence the inactive state of the cutaneous tissue in many visceral diseases; the flaccidity of the mammæ and suspension of the secretion of milk in hysteritis or peritonitis, &c. the pallor and coldness of the surface in the diversified forms of neurotic diseases, &c. &c.

This fact, that sedation in one tissue is the common result of irritation in another tissue, is the foundation of the principle of derivation, or revulsion, so extensively useful in therapeutics, and is so frequently observed, that some pathologists have denied that a general irritation can ever exist, insisting that irritation cannot exist in one part without a corresponding diminution of excitement in another. Certainly the indication of "equalizing excitement," to use the lan-

* *Traité des Malades Chirurgicales*, &c. &c. par M. Le Baron Boyer, Tome I. p. 105.

guage of the distinguished RUSH, is one of the most important and constant presented to the clinical practitioner.

2d. Indirect sedation is also observed in parts for a long time subjected to irritations. This arises from the well-known law of the animal economy, that continued excitement is followed by exhaustion. Much exercise of the muscles, senses, and mind, is succeeded by an exhaustion, which demands rest and sleep for the recovery of their wonted activity. The intemperate man has organic, as well as animal life depressed after the influence of his accustomed stimulus, whether alcohol, opium, or tobacco, has subsided. When the organic actions have been unduly excited, diminution of action below the normal standard is usually observed, demanding comparative rest for its re-establishment. Thus every one is familiar with the relaxing effects of continued heat; the general vascular excitement, at first induced by the stimulus of caloric, being followed by comparative torpor. The surgeon often notices this diminution of action, in parts under the continued influence of warm poultices and fomentations, or from long immersion in warm fluids; the red, turgid, tense condition of the tissue, as induced primarily by the stimulus of heat, is succeeded by a pallid, relaxed, and shrivelled appearance, directly opposed to the former. So also when profuse discharges of serum, mucus, or pus have long issued from any surface, so much deficiency of excitement exists, that stimuli become necessary to restore the healthy or recuperative actions. Who has not observed large abscesses discharging much pus, without any effort at recovery, until irritating washes are employed?

From the observations now made, it is manifest that the symptoms of sedation must be modified by the tissue or organ involved; whatever may be the actions or functions of a part, these phenomena are less distinctly manifested, or actually suspended, in a state of sedation. The symptoms also vary according as the sedative influence operates on the organic or animal life, separately or combined; and finally, they differ as a part, or the whole system is in a state of depression.

To illustrate these observations, and the great practical importance of a philosophical investigation of this affection, I shall adduce some examples of sedation, exhibiting its symptoms, progress, and terminations under two general divisions of local and general sedation. In this attempt, much indulgence must be granted, from the novelty of the investigation, and especially from the imperfect knowledge, as yet possessed, of the actions and functions of the numerous tissues and organs of the animal system.

1. *Local Sedations*.—The hands and feet are very frequently in a

state of sedation from local depletion, by venesection, leeches, &c. from abstraction of nervous influence, as during paroxysms of hysteria, and in paralysis of the nerves, from subjection to cold, from severe contusions, &c. In all these, and similar cases, there will be usually observed a diminution of organic and animal phenomena. The part is contracted, pale, cold, and comparatively bloodless; there is diminished evidence of circulation, secretion, and absorption; there is less irritability, the part not being so readily excited; there is also diminished sensibility, the part feels numb, and sensation is impaired, and sometimes suspended.

These phenomena are modified, sometimes in a very important manner, by various circumstances, especially by the cause of sedation, whether external or internal, as having simply a local or a general influence, and also by the rapidity of its agency. For example, if the general and capillary circulation be excited, and the hands be then suddenly subjected to severe cold, it often happens that instead of becoming contracted, pale, and exsanguineous, they will exhibit a dark, venous or purplish colour, and be turgid, from an arrest, more or less complete, of the blood in the veins; the symptoms of excitement rapidly disappearing. If this semi-stagnation, or congestion of blood, continues for some time, serous infiltrations take place into the cellular tissue, increasing the swelling; and on mucous surfaces, as of the eye, nose, &c. discharges of a watery fluid, and when the cold is very severe, of dark-coloured blood, frequently occur. Every one is familiar with the watery eye, and the running from the nose, which ensue on exposure to a cold air, and LARREY and others have noticed the venous hæmorrhages from the nose, mouth, and bowels, which often precede death from exposure to intense cold. Hence sedation under certain circumstances gives rise to passive congestions, dropsies, and hæmorrhages: for let it be here remarked, that there is no evidence of active capillary excitement, or nervous irritation in such cases; the blood is not drawn into, or rapidly determined to a part, under these circumstances, but is excluded by the torpid condition of the capillaries, while the veins swell from the quantity of blood suddenly thrown upon them in their state of comparative inactivity. This local congestion also seldom continues for any length of time, at least on the surface of the body, for the veins gradually empty themselves of their contents, and as little or no blood is furnished by the capillaries, the whole eventually becomes, under the influence of intense cold, pale, bloodless, resembling in some cases parts actually dead.*

* Of course, actual death ensues when this depression, or suspension of action is continued beyond a certain period.

The hands, feet, and other parts of minor importance, may remain in a state of moderate sedation when the cause continues operative for days, and even years, without any very urgent symptoms, or any distressing consequences, excepting that this diminution of excitement necessarily involves defective nutrition, impaired function, and loss of vital power. Activity, it is well known, is essential not only for the increase, but even for the maintenance of vitality. Man, by the appointment of his Creator, must not only procure his bread by the sweat of his brow, but is indebted to the same labour for ability to digest his food, and for the preservation of all his organic actions. Practical physicians are familiar with the consequences of continued sedation in paralytic limbs, for example, which become contracted, shrivelled, and debilitated in their organic and animal powers—there being defect of nutrition and of muscular energy. Similar changes occur even when parts are merely kept at rest for a length of time, as the surgeon daily witnesses after the confinement of limbs in the treatment of strains, fractures, &c. Should, however, the cause of sedation be removed, the natural phenomena are in most cases soon restored, agreeably to that law of the animal economy, that there is a disposition to reaction after depression. The part loses its pale and contracted appearance, and exhibits more or less of its natural vital phenomena, proportionate to the intensity of this reaction. It is a remarkable fact, and one not hitherto in any satisfactory manner explained, that this reaction after depression is frequently inordinate, transcending the normal actions, and manifesting the phenomena and consequences of inflammation, sometimes of the most intense character, so that suppuration, ulceration, and even mortification rapidly ensue. Such cases are often observed after severe contusions, and exposure to intense cold, giving rise to extensive gangrenous abscesses.

- Should a congestive state of the veins exist during the sedation of a superficial portion of the body, this rapidly disappears on the occurrence of reaction. The veins resume their active contraction,* and assist the vis a tergo from the now excited capillaries to force the hitherto nearly stagnant fluid onwards to the heart; the purplish colour is succeeded by the scarlet blush, and the turgescence from venous congestion is supplanted by that arising from capillary excite-

* That they possess this power is still disputed, although the facts in support are so strong, that to the author at least they seem irresistible. The discussion of this and other points must of course be passed over in an essay of this kind.

ment. Irritation and active congestion of the capillaries succeed sedation and passive congestion in the veins, states directly opposed, but unfortunately too often confounded.

The observations made as to sedation in a portion of the extremities, are applicable in general to all the superficial portions of the body, and, in all probability, to many of the deeper seated tissues. Sometimes the whole cutaneous tissue has its organic actions depressed, in which case injurious consequences may result, the nature and severity of which depend on many attending circumstances. If such depression, for example, occur suddenly in an excited state of the system, a large proportion of the blood which usually circulates in the external capillaries, being no longer attracted* to the surface, is confined to the internal organs and tissues where it may give rise to irritation and inflammation in some instances, in others be followed merely by symptoms of plethora in the large arteries or veins, particularly of the important viscera of the head, thorax, and abdomen. Hence arise some of the inflammatory affections of the viscera from exposure to moderate cold; hence also the symptoms of oppression and of general *malaise* in plethoric individuals, when, from any cause, the cutaneous secretions are diminished, and the surface cold and contracted.

Thus, a depressed state of the external tissues becomes, in some instances, of serious importance. But sedation is a far more dangerous affection when involving the internal organs.

The actions of the *heart*, it is well known, cannot be disturbed without serious consequences, not only to the health but the life of the individual. A suspension of its actions is immediate death. A diminution of action may arise from several direct causes, as the influence of digitalis, colchicum, the essential oil of tobacco, and other medicinal agents, and also from certain passions, as joy, sorrow, despair, fear, &c. The loss of blood, or other fluids, diminishes in most cases the frequency, as well as force of the heart's action. In these, and similar cases, the phenomena which result approximate to those of syncope, and often complete syncope ensues. According to BICHAT, the lungs, brain, and other organs, would suffer from the loss of the impulse from the heart, and defective supply of red blood,

* For the author's views of the influence exerted by the capillaries over the circulation of the blood, their agency in facilitating or retarding the determination of blood to particular points, the reader is referred to Vol. VI. of the North American Medical and Surgical Journal. Agreeably to those views, blood is attracted to an irritated part, and excluded, "not driven," from a part in a state of sedation.

so that sedation of the central organ of the circulation would be necessarily followed by a similar condition of all other organs, and should it continue, would be productive of much danger. Every practitioner should be familiar with this state of the general system, especially when complicated with actual debility, as in cases of severe hæmorrhage. In simple sedation without loss of strength, the danger is less, and usually disappears on the removal of the cause; here the patient is comfortable when perfectly at rest in a horizontal posture, but motion, or even simple elevation, is attended by giddiness of the head, increase of pallor, coldness of the extremities, weakness of pulse, sense of oppression in the region of the heart, anxiety in breathing, and, if the symptoms be aggravated, all action ceases, and death ensues. The *post mortem* appearances where general death thus commences at the heart, have not been clearly pointed out, and must vary according to the cause and other modifying circumstances. Bichat mentions one fact of importance, viz. that the lungs are remarkably free from blood, and if healthy, collapse freely. This of course arises from the diminished action of the right ventricle, and, *à priori*, it may be inferred that all the cavities of this organ would be congested with blood which they had been unable to expel.

Again, the *lungs* may be in a state of sedation. The functions of the lungs have reference almost exclusively to the conversion of the dark heterogeneous fluid brought to them by the pulmonary artery into the bright arterial blood returned through the pulmonary veins, and necessary for the vivification of the animal economy. This important change occurs in the mucous membrane lining the bronchi and air-cells, and it is therefore to this membrane that my observations relate when treating of sedation of the lungs, bearing in mind the great peculiarity of its vascular and nervous organization.

—Very numerous circumstances may directly or indirectly depress or suspend the activity of the respiratory functions; all of which are by no means understood, especially as this view of the subject has been hitherto very much neglected. Sedation of the lungs is mainly produced by the deficient supply of oxygen, their normal and essential stimulus, without which hæmatosis cannot occur, and death speedily results. This deficiency occurs in highly rarefied states of the atmosphere from great heat or from lofty elevation on mountains; and from the admixture of irrespirable gases with the atmosphere, as hydrogen, carbonic acid, &c. or from the consumption of the oxygen in a confined situation. Hence result many of the evil consequences of crowded, ill-ventilated apartments, of jails, hospitals, mines, &c. A sufficiency of pure air may not be supplied from various circum-

stances, as imperfect dilatation of the thorax from paralysis of the intercostal muscles or diaphragm; from rheumatic or other inflammatory and painful diseases of these muscles; from fractures of the ribs; ruptures of the diaphragm, &c.; also collapse, partial or complete, of one or both lungs from penetrating wounds, from effusions of serum, or blood, or pus in the cavities; indurations, tumours, abscesses of the lungs; obstructions in the air-cells and bronchi from accumulation of mucus; bloody or purulent fluids; or the introduction of foreign bodies; pressure on the trachea by tight ligatures or bandages — by aneurismal and other tumours; spasmodic and inflammatory affections of the larynx and trachea, with or without effusion; tumours in the fauces, pharynx, &c. Complete exclusion of pure air is caused by submersion in irrespirable gases and in liquids, by hanging, and in vacuo. Sedation arises also from the direct influence of sedative agents, as miasmata, sulphuretted hydrogen, fumes of stramonium, tobacco, and other narcotics, a very cold atmosphere, &c.* and indirectly, from cold to the surface of the body, or to the mucous membranes of the mouth, pharynx, stomach, &c. Diminution of action, there can be no doubt, results also through the medium of the nervous system, although the agency of this system in respiration is not yet fully developed by physiologists. Hence impaired respiration is noticed in injuries and diseases of the brain and spinal marrow, in contusions and wounds of the pneumogastric nerves, in violent or engrossing passions of the mind, and during the operation of certain narcotic poisons. Examples need hardly be adduced to the practical physician in which the nervous influence, from being concentrated in other tissues, or from simple interruption of the natural means of access, or from direct sedative agents, is diminished in the mucous membrane of the trachea and its remote ramifications; it is scarcely necessary even to remind the uninitiated of the “long drawn sigh” which he has so often involuntarily made to relieve the thoracic oppression resulting from intense mental emotions, or of the laborious, hasty respiration which the indulgence of his passions renders essential for his continued existence. Well-instructed physiologists are also acquainted with the important experiments of Mr. BRODIE on the *modus operandi* of opium and other similar poisons in causing death, and his inference, that they kill from a paralytic condition, (sedation,) of the muscles and nerves involved in the mecha-

* In the case of cold a counteracting influence is exerted by the increased quantity of oxygen supplied, so that it is only in extreme degrees of cold, or in susceptible patients, that sedation is experienced.

nical dilatation of the thorax; and hence, that life may be continued, and often preserved by artificial respiration.*

Such are some of the causes by which the activity of the respiratory function is suspended or diminished. In the former case, death speedily ensues, being often preceded and attended by livid condition of the surface, by great turgescence and blackness of the face and neck, and distention of the jugular veins. In the latter, the patient complains more or less of a feeling of weight and oppression in the breast, with a sense of stricture, fulness, and great uneasiness. There is dyspnœa, orthopnœa, with great anxiety for fresh, pure, and cool air. A purplish colour is first noticed in the lips, soon in the mucous membrane of the mouth generally, and finally, in the skin, eyes, &c. and in bad cases there is distention of the veins of the neck and face, followed by œdema from the effusion of serum. There is also effusion of sero-mucous fluids in the trachea and bronchi, as evinced by the character of the cough, by auscultation, and by slight but laborious expectoration. Should these symptoms not speedily be relieved by nature or art, a diminished energy of the heart and brain ensues, and the patient soon perishes from universal sedation.

These symptoms have been very frequently, indeed, almost daily noticed by the experienced practitioner, in all those numerous and fatal diseases in which universal death commences in the lungs, (to use the appropriate language of Bichat,) but their explanation has not been satisfactorily made, indeed seldom attempted, and hence little practical improvement has resulted from this multiplied experience. The rationale, or chain of causes has been beautifully illustrated by the justly celebrated Bichat,† and more especially by Dr. Williams, of Scotland, in a short but most valuable experimental essay on the causes and effects of the obstruction of the blood in the lungs.‡ These authors differ on some minute points, to be explained by their referring to differing stages of the experiment, and by the different objects more especially in view, but they agree on the following important facts and inferences.

1. That when respiration is suddenly arrested by ligatures around the trachea, by submersion in liquids or irrespirable gases, or by placing animals in vacuo, not only is hæmatisis prevented, but also the pulmonic circulation.

* Vide cases in 2d. and 3d. Vol. of the North American Medical and Surgical Journal, where this suggestion has been successfully acted on in dangerous sedation of the whole system from laudanum.

† On Life and Death, Part II. Chap. VI. &c.

‡ Ed. Med. and Surg. Journ. 1823. Republished in the Foreign Journal of Medicine, Vol. IV. p. 20, Philadelphia.

2. That the circulation is first interrupted in the mucous membrane of the lungs, little blood passing from the ramifications of the pulmonary artery into the radicles and trunks of the pulmonary veins.

3. That hence there is a successive stagnation of blood in the pulmonary artery, the right ventricle and auricle of the heart, in the inferior and superior cavæ, and finally, in their various radicles in the abdomen, neck, face, &c. all of which become excessively distended.

4. That little blood comparatively is found in the pulmonary veins, left auricle, and left ventricle of the heart.

5. That this blood is of a venous instead of an arterial colour.

6. That the obstruction of the blood in the lungs is not the result of any mechanical cause.

7. That such obstruction is the result of the "non-excitement," (Bichat,) of the mucous membrane by vital air.*

8. That the action of the heart ceases from the want of its natural stimulus, arterial blood;† and finally,

9. That the presence of venous blood in the arteries, (or the absence of arterial blood,) is the immediate cause of death in all the tissues and organs of the body in these cases of "asphyxia."‡

Such are the facts connected with complete sedation of the mucous membrane;§ hence the inferences seem unavoidable, that in moderate cases of sedation there are necessarily,

1st. Deficient hæmatisis.

2d. Partial stagnation, and of course, congestion of blood in the mucous membrane of lungs, pulmonary artery and right side of the heart.

3d. A proportional diminution of quantity in the pulmonary veins and left side of the heart.

4th. The presence of blood imperfectly elaborated, and thus far injurious, in the left side of the heart, and the whole arterial system,

* Bichat attributes it also to other causes, but most of them are secondary, the result of this primary cause.

† Whether the action of the heart ceases because venous blood is present in its arteries and its cavities, as Bichat supposes, or because little or no blood eventually enters this organ, owing to the difficulty in the lungs, is doubtful; it is probable, action ceases from defect of quality, and also of quantity in left side.

‡ This last idea is less distinctly presented by Williams than by Bichat; the former speaks of the obstruction being the cause of universal death, without so positively noticing this intermediate important link, as if he thought death was the result of the want of blood in the other organs.

§ Complete sedation, that is, total suspension of action, does not occur *instantaneously*, as some pure air is always enclosed in the bronchi.

gradually, but slowly diminishing the actions of the various tissues and organs of the body, until complete sedation or death results.

It should here be remarked, that the passive congestion of the blood in these cases, although the result of sedation, nevertheless aggravates the mischief by pressing on the bronchial vessels and cells, thus preventing the admission of pure air, the natural and essential stimulus of the lungs. Moreover, this congestion is here also followed by its usual consequences, as noticed when speaking of the influence of cold and other similar causes on the skin, viz. effusion. Hence the œdema of the cellular tissue of face and neck; hence, more especially, the effusion of sero-mucous fluids, and often of blood from the bronchial mucous membrane, or from the proper cellular tissue of the lungs, giving rise to a dropsy, or a sanguineous infiltration of these organs, or to an abundant collection of mucus or blood in the bronchial tubes, by which suffocation is often very speedily produced, and in all cases the pulmonary distress is greatly and dangerously aggravated. The danger of these affections is enhanced in those instances where an inflammatory irritation had previously existed in any of the tissues of the lungs, for then blood is actively determined to the organs while it is passively congested in the manner already indicated; so that a fatal engorgement very speedily ensues unless suitable and timely assistance be afforded the unhappy patient.

These symptoms, of course, vary in every possible degree, from the slight uneasiness or stricture of the chest, demanding a full inspiration, to those most terrible affections in which the lungs are suddenly engorged, and death ensues as certainly as if the trachea were secured by a ligature, or the patient were submerged in an irrespirable gas, or beneath the waters of the ocean. Neither are the cases uncommon, for they include, as already hinted, all those in which the lungs are chiefly involved, or where death commences in these organs; the heart, brain, and other organs being secondarily affected. Particular specification need hardly be made, but many, and indeed frequently, all of the symptoms which practical men regard as dangerous, and even necessarily fatal, are often observed in the latter stages of laryngitis, tracheitis, bronchitis, pneumonitis, pleuritis, hydrothorax, empyema, tussis senilis, pertussis, asthma, humid and dry, of most febrile affections, particularly the idiopathic form, and especially in all the varieties of typhoid fever. They also arise from any interruption to healthy inspiration from the effect of foreign bodies in the

* According to Richat, this includes "by far the greater number of diseases," p. 292. Boston edition of 1827.

throat or larynx, from tumours and abscesses of the fauces: also when the brain and spinal marrow are so affected, that the usual nervous influence is withdrawn, as in apoplexy, epilepsy, sometimes in hysteria, and as often occurs from the influence of poisons, as already hinted. This allusion shows the practical importance of the subject, as well as throws light on the pathology of the diseases alluded to.

The *brain*, the centre of the nervous system, is the subject of sedative influences: as in cases of concussion, of compression, of poisoning from narcotics, as opium, cicuta. Its activity is often diminished by certain depressing passions, as grief, fear, despair, and not unfrequently by the loss of blood, or indirectly by the accumulation of blood in the organ.

If the depressing agent be very powerful, death ensues sometimes instantaneously; in other cases, after a few minutes. Bichat has ably investigated the manner in which the lungs and heart and the organs generally perish, when death thus commences with the brain. He maintains that cessation of action in the brain is followed by interruption of nervous influence; hence, paralysis of intercostal muscles and diaphragm, suspension of the mechanical dilatation of the chest, arrest of hæmotosis, presence of venous blood in the arteries, whence suspension of action in lungs, heart and all the tissues. He denies that there is any direct effect on the heart or lungs, but affirms that death ensues, as in asphyxia, from pulmonary and venous congestion. Of this, there can be no doubt in many cases; it would seem however that when universal death *instantly* occurs, that this chain of intermediate agents is not concerned, but that at once, the functions of the lungs and heart are suspended. This idea is supported by the rapidity of its occurrence, and by the absence of the purplish colour and other indications of venous congestion which characterize asphyxia. The question however regards the influence of the brain and nerves on organic life, a subject still very unsettled although of great importance. Bichat denies all direct agency, and maintains that the influence of the brain is always secondary, or indirect through the lungs. That a direct as well as an indirect influence is exerted in the perfect animals, seems capable of proof did the occasion admit of the investigation. How such direct agency is exerted is also doubtful, for late investigations seem to prove that the pneumogastric is a nerve of motion simply, distributed to the muscular fibres of the larynx, trachea and bronchi, and thus indirectly concerned in the respiratory functions, having no positive or direct agency in hæmotosis, while the uses of the ganglionic system and the effect of its connexion with the cerebral system are imperfectly elucidated. The fact, however,

that a direct agency under suitable circumstances is exerted by the brain and the organs of circulation, nutrition, secretion, &c. seems to be the prevalent opinion. Hence suspension of the cerebral functions is both directly and indirectly the cause of general death.

Such being the phenomena when the sedative cause is powerful, the effects of moderate sedation may be adduced almost *à priori* by the intelligent physiologist, and may often be observed by the attentive practitioner.* The intellectual activity is impaired; the senses are null; the nerves of sensation and motion are partially paralyzed, hence slow, irregular, sometimes convulsive movements, also impaired respiration, with its consequences, sedation of the capillaries, of the bronchial mucous membrane, imperfect hæmatisis, congestion in the lungs, and in the right side of the heart; effusion into the bronchial tubes supervening and aggravating the mischief.† The diminished activity of the par vagum will increase the symptoms of pulmonary distress; and the presence of imperfectly elaborated blood throughout the aortic system, will diminish the activity of all the tissues. In most cases of cerebral sedation, there is a secondary, but a very important additional source of depression from congestion in the veins and sinuses of the brain. Whether the mere sedation of this organ will so diminish and interrupt the organic actions, as to favour the collection of blood in its venous apparatus, is a point not yet elucidated or even investigated, but that such congestion will result from impaired respiration, few will be disposed to deny, especially in those severe cases in which the large and the small vessels of the face and neck, are distended almost, and sometimes, actually, beyond their powers of resistance. The congestion here, as in the lungs, is often succeeded by effusion of serum, or of blood, hence the œdema, sometimes the ecchymosis of the face and neck, hence the dropsies, so called, in the cellular tissue of the pia mater, or in the ventricles of the brain, and hence the apoplexies from ef-

* In all these attempts to analyze diseased actions, and to exemplify them by decided cases from clinical experience, the difficulty is exceedingly great from the complication which so frequently exists. In cases of concussion, for example, how often is it that "réaction," and "inflammation," irritative states of the organic actions, are complicated with the sedative state of the brain and nerves. Much philosophical acumen as well as experience is required for the due detection of each morbid element.

† Practical men have often remarked, that death from injuries of the spinal marrow appears to result immediately from mucus collected in the bronchi.—*Physick's Lectures on Surgery.*

fusion of venous blood on the surface, in the substance or ventricles of this organ.

Add to these complicated sources of danger, arising from the original sedative cause, from the secondary sedation of the muscles, and of the lungs, from the pulmonary and cerebral congestion, and the serous or sanguineous effusions, the diminution of the direct nervous influence which the brain exercises over the heart and its dependancies, and we shall be at no loss to account for the danger of cerebral depression, and for the intricate complications resulting when violent reëction, (irritation,) supervenes on this depression. Hence all authors have treated of cerebral affections as most intricate and dangerous; and perhaps no point of pathology still demands more careful and scientific investigation. Examples of sedation occur to the practitioner in cases of concussion of the brain, in affections arising from certain moral causes, or from peculiar poisons; and indirectly they are afforded in the various compressions of the brain, from effusion or congestion of fluids, depression of the bone, &c. they are seen in the varieties of apoplexy, and of the congestive or typhoid forms of fever.

The influence of a sedative cause may thus be traced from any one organ, in its direct or indirect consequences, upon the functions of other organs and tissues of the economy, and the more accurately, and minutely this is done, the more will the importance of the subject be evinced and its practical utility exemplified. I shall content myself with one other illustration as presenting many practical indications of daily occurrence, viz. sedation in the stomach and chylopoietic viscera generally.

To enter minutely into this subject would lengthen out this essay far beyond the allotted space, it will be sufficient to establish certain general principles. Every one is aware of the importance of the stomach in the animal economy and of the fluctuating condition of the organic and animal life, in derangements of this organ. Certainly there is no viscus with which mind or body so promptly sympathizes as with the stomach. Hence sedation of the peculiar functions of this organ, (particularly of its mucous tissue,) while it is often caused by a similar state of other organs, has a reflex influence probably on all other tissues, and depression of its vital actions is thus directly injurious. Its indirect influence by depriving the digestive process of one of its most important links, thus preventing the suitable preparation of aliment, taken into the stomach, and impairing nutrition, is perhaps no less mischievous, especially when we consider the irritations arising from the decomposition of vegetable and animal mat-

ters which necessarily occur when the vital actions of the stomach are diminished or suspended. The same causes which induce sedation of the stomach may influence the secretions of the mucous membrane of the bowels, pancreas and liver, all of which afford fluids more or less important in digestion, the diminution or suspension of which must have a proportional influence of a deleterious character. With respect to the *liver*, one or two indirect consequences result which are of importance, and may justify a few observations.

The uses of the bile are not positively ascertained, and it is useless to dwell on points involving simple hypothesis. There seems however to be little doubt, that whatever may be its positive influences on the alimentary mass, it is truly an excrementitious fluid, eliminating something from the blood which is injurious to the system. Hence the legitimate inference, that when bile is not secreted, that its elements remaining in the blood, produce mischief.* This is confirmed by clinical observation, and has been of very universal remark. In jaundice, for example, where the stools evince no evidence of bile, how miserable and languid is the whole man! not only is there languor of the brain and its dependancies, the senses and voluntary muscles, but of organic life universally,† activity is diminished and not unfrequently suspended in death.

A second indirect consequence from partial or complete sedation of the liver depends on its peculiar circulation. The *vena portarum* formed of veins from the stomach, intestines, pancreas and spleen, ramifies like an artery to every portion of the liver, and no doubt contributes very materially, perhaps exclusively, to the secretion of bile, the nutrition of the organ being dependant on arterial blood, furnished by the hepatic artery. The mass of blood thus conveyed to the liver by these two vessels is diminished by the amount furnished for the formation of bile, which in many states of the system, healthy and diseased, is considerable; the balance is returned to the general circulation by the hepatic veins, there being no other channels of communication. Hence, in cases of torpor, (sedation,) of the secretory vessels of this large organ, little or no bile being formed, as is proved by the phenomena during life and by the appearances post mortem, there must be a remora of the vessels of the liver, one of the great

* All are aware of the speedily fatal consequences which follow complete sedation of the kidneys, when no urine is secreted, and the elements remain in the circulation.

† Irritation of some tissue and even general fever may complicate this affection, and often does, but the sedative influence of blood not purified by the liver, is in all cases to be remarked.

outlets being closed. This congestion may be, and occasionally is, aggravated by various circumstances, as by a similar congestion already formed in the right side of the heart and the *venæ cavæ*, by a torpor of the large veins of the liver, which no doubt often exists in the case supposed, and by any accidental excitement of the stomach, bowels, and associated viscera, throwing an increased quantity of blood on the portal system. This congestion, thus passively formed, often becomes very great, involving not only the capillaries and ramifications of the *vena portarum* in the liver, but also the trunk and all its radicles, even the most minute, in the substance of the spleen and pancreas, and on the mucous membranes of the stomach and whole intestinal tube. It is indicated by severe symptoms of præcordial distress, familiar to every practitioner, such as great weight and oppression at the epigastric, inability to take a full inspiration; a disposition to sigh with a feeling of tightness or stricture, as if bound by a cord, with a general sense of fulness and tension of the abdomen and even of the chest. As the liver is not a *vital* organ, the distress often continues for a long time, without any immediate danger, or any evident evil; but relief to the congestion is often afforded by nature* in different ways:

1st. By a violent reaction of the capillaries of the liver, so that a profuse secretion of bile is rapidly and imperfectly formed from the mass of accumulated blood, which, being suddenly poured into the bowels and stomach, gives rise to bilious diarrhoeas, cholera morbus, &c. and, at the same time, relieves exceedingly the symptoms of præcordial distress.

2d. The congestion, when very great in the radicles, as well as in the trunk and ramifications of the *vena portarum*, is often relieved by a venous hæmorrhage; immense quantities of dark black blood, if reports of patients can be at all credited, are effused into the stomach and bowels, which, when discharged by the mouth, forms the disease termed hæmatemesis, or by the rectum, melæna. Here also great relief to the symptoms of congestion is afforded, whatever may be the subsequent dangers, in the present case from the hæmorrhage, and in the former, from the inordinate quantity and acrid quality of the bile. But—

3d. In certain cases, and under peculiar circumstances, not well understood, abundant effusions of serous fluid† are the result of this

* That is, from causes to us unknown, or as it is said, spontaneously.

† Analogous, it will be noticed, to the effusions which occur in the cellular tissue, and in serous cavities in the other varieties of congestion already noticed.

passive congestion, which, whether discharged per os vel anum, or by both orifices, afford but partial relief to the preceding symptoms in most patients, and not unfrequently rapidly diminish the strength, and sometimes cause death in a few days, or even hours: no biliary secretion being observed in any of the evacuations. Examples of this character may be found in the acute serous diarrhœas, not unfrequently met with in warm weather, particularly among the intemperate, and occasionally among infants, but especially in the epidemic or Indian cholera, the most terrible and prevalent epidemic to which the human species has ever been subjected, and which, whatever may be its true pathology, most certainly involves a suppression of the biliary secretion and congestion of the portal system.

2. *General Sedation.*—Many pathologists of the present day are disposed to deny that there can be a general irritation involving all the tissues of the system, but that the nervous excitement, or the blood, determined to any particular tissue, must consequently be diminished in other tissues. Without entering on this question, the negative of which we would maintain, we cannot suppose that a general sedation or diminution of excitement will be denied. Examples are numerous from severe cold, as observed in hybernating animals, and in individuals, torpid, insensible in mind and body, from long exposure to snow or frost; in syncope from loss of blood, or any other cause; and in poisoning from prussic acid, digitalis, &c. In these examples there is a depression of action, as far as can be determined, in all the tissues of the system—in all those of organic and animal life. The indirect effects of many of the general and diffusible stimuli are similar to those of direct sedatives; thus, all are aware of the general depression resulting from the excitement from caloric, alcohol, &c.

There is another important state of the body which may every day be observed, and should be referred to the same head. It consists in the depression of all organs or tissues, in consequence of continued or severe irritation in any one organ. Thus, severe pain will depress the actions of life even to a fatal extent; hence a great sufferer has exclaimed, “that there is no greater sedative in nature.” Similar effects are produced by complete obstructions in the bowels, and by chronic or severe acute inflammations in the joints, bones, brain, lungs, &c. Hence result the defective nutrition, the emaciation, the debility, and finally death from chronic diseases in any susceptible tissue. It would seem as if the powers of life were concentrated on the affected part at the expense of every other organ. Reaction, which would seem to be general, often results from this state of de-

pression, especially when the vital powers have been little impaired. All are familiar with the healthy reaction after exposure to cold—giving new activity and energy to the organic phenomena, “the tonic effects of cold,” and the inordinate reaction, manifesting the symptoms of inflammatory fever. The practitioner of much observation will notice similar morbid excitements recurring after frequent hæmorrhages, and other similar sources of depression presenting febrile affections for his management, which will make the greatest demands on his professional acumen and resources.*

Again, there is still another, and a very peculiar but not uncommon state observed, in which the reaction here noticed seems to involve almost exclusively the organs of animal life; the general circulation, the secretory and nutritive actions being exceedingly depressed. This is observed as a consequence of some of the narcotic stimuli—as opium, but particularly alcohol. The intemperate man is first excited by his potations, then, as already intimated, results the horrible depression of mind and body; for relief of which he sues for his accustomed stimulus, which experience teaches him will certainly relieve. Should his suit be denied, the feelings of depression often disappear; the brain, senses, and muscles, manifest extraordinary activity, an acuteness of intellect, and a brilliancy of imagination, are often developed in stronger characters than on any former occasion, and force is required to restrain his locomotive propensities, while his skin is pallid or livid, and covered with a cold, clammy, perspiration; his tongue and mouth pale, and his pulse hardly, if at all, perceptible.

Similar states are sometimes observed after depression from free bleeding, or purging, and in many cases of hysteria, as must be familiar to every practitioner. So also in many patients, while in *articulo mortis*, an acuteness of sensation, and a mental energy are displayed, as if the intellectual or spiritual portion of man were disposed to manifest its independence on organized matter, and declare plainly its superior origin, and its higher destination.

In some cases, there is depression of the animal life, while the organic life is but little affected, which depression may be regarded in a restricted sense as general, affecting the cerebro-spinal nervous system, which penetrates every portion of the human fabric. Examples

* “*Exhaustion with reaction.*”—Mr. Hall, *Medico-Chirurgical Transactions*, Vol. XIII. Part I. where the symptoms are admirably detailed. Mr. Travers, in his work on Constitutional Irritation, p. 475, terms this state “prostration with excitement.”

may be adduced, where depression results from various mental affections, particularly in cases of hypochondriasis.

Perhaps no further illustrations are requisite as to the nature and consequences of sedation, although every one may not be disposed to acknowledge the distinction drawn between diminution of action and loss of strength, and would insist, that asthenia or debility would include the cases detailed. To such it may be said, that the views here presented, have been forced on the writer by clinical observations, and the reflexions thence originating, and that should a similar attention be directed to this point, in some respects novel, perhaps a similar result may ensue, and the great practical importance of the distinction be recognised. It should also be observed, that many of the illustrations given, are examples of sedation and debility conjoined, for they have a mutual dependance, and, as it were, a natural affinity: for a diminution of action will, sooner or later, produce a loss of power, while a diminution of power is usually succeeded by loss of action. In exposure to cold, there may be a simple depression of action; so also in syncope from mental impressions, from disagreeable or noxious effluvia: on the contrary, in syncope from hæmorrhage, or severe catharsis, there is loss of strength, as well as of action. That this is true, seems proved by the excitement, organic or animal, or both, which often occurs in states of great debility. In an individual exhausted by hæmorrhage, a slight irritation, a stimulating meal for example, will often excite a severe fever, which may soon be fatal; the free supply of aliment to individuals exhausted by abstinence, it is well-known, excites fever, and thus often kills. Here is increased action, with great debility. Again, if some moral or mental stimulus be addressed to individuals thus debilitated, a transitory excitement of the brain and nerves will often be manifested. Thus, under the influence of fear, joy, anxiety, hope, &c. a patient, exhausted by evacuations or disease, will be roused to exertions, which *a priori* would be deemed impossible; he can run from a house on fire; he can speak and move with activity and apparent energy; there is great animal excitement, but there is real debility—want of power to sustain this excitement; he soon sinks exhausted, perhaps into the arms of death.

- There is a state of system very frequently remarked by physicians and surgeons, under the appropriate term of *prostration* or *collapse*, which I am disposed to regard as an acute case of sedation, complicated with debility. There is a rapid loss of action, and also of power. Mr. TRAVERS, in his work on “Constitutional Irritation,” as it is grossly misnamed, abounds with illustrations of this prostrated con-

dition. It results from severe burns, violent accidents, important surgical operations, high grades of inflammation, long-continued and torturing pain, powerful mental emotions, profuse evacuations of serum, blood, pus, &c. active poisons. "It is marked by universal pallor and contraction of the surface, shuddering, very small and rapid pulse, astoundment of the mental faculties, generally a dilated pupil, shortened respiration, dryness of the tongue and fauces, indistinctness, and at length, cessation of the pulse at the wrist, stupor, oppressed and noisy respiration, coldness of the feet and hands, involuntary twitchings, relaxation of the sphincters, confirmed insensibility, stertor, and death."* The powers and actions of the system seem to be alike overwhelmed by the severity of the injuring cause. In mild cases, re action ensues, as in other examples of sedation, but in the more terrible instances, action and power continue to decline rapidly, to complete suspension in death, even when resisted by all the resources of the profession.

Treatment of sedation.—From the nature and consequences of sedation, the therapeutical indications are to be deduced. The leading indication is to facilitate re action. The measures by which this may be effected are—

1. *Removing the cause*, if possible, should this continue operative. By reference to the catalogue already given, it will be perceived that various measures, medical and surgical, will frequently be demanded from the judicious and scientific practitioner, to lessen or remove the depressing agent, whether its influence be direct or indirect. This being effected, re action will, in numerous cases, spontaneously occur. Should this not ensue from any circumstances, resort must be had to,

2. *Local stimulants*, adapted to the tissue or organ concerned. If sedation exist in the extremities, or on the surface, frictions, dry and moist heat, stimulating liniments, sinapisms, blisters, are advantageous when judiciously employed. Where venous congestion is present, stimulating frictions and warmth are very important in re citing the torpid veins, and augmenting the action of the arteries and capillaries, that the blood may not only be determined to the part, but its transmission be facilitated. Such local stimuli become of more importance when the whole surface is involved in the sedative influence, especially where internal irritation, or plethora, has also been produced. They act then not simply as excitants, but also as counter-irritants. In sedation of the *heart*, rest in a horizontal position is of importance, while stimuli to the stomach, nostrils, and skin,

* P. 406, Op. Cit.

are useful to relieve the disposition to syncope, but should not be so freely given as to produce general excitement. These cases are more dangerous when there is an actual loss of the circulating fluid, and also of strength; here stimuli must often be freely administered, but they are, at best, but temporary and palliative; the disposition to prostration can only be permanently relieved by suitable food and drink to replenish the vessels, and repair the strength.

In sedation of the *lungs*, the due supply of oxygen becomes of essential importance, this being their natural excitant, and requisite for the formation of arterial blood, and of course, for the prevention of all those evil consequences which result from imperfect hæmatisation. Patients should be allowed, therefore, a pure, fresh, and cool atmosphere: all impediments to the entrance of air, and the due expansion of the thorax, should be most carefully removed; hence, *inter alia*, expectorants, and emetics, to facilitate the excretion of serum, mucus, pus, and even blood, from the bronchi,—the removal of foreign bodies from the pharynx, larynx, trachea, even by severe surgical operations, are of great importance. Perhaps in bad cases, nothing would be superior to the inhalation of oxygen gas, either pure or moderately diluted with nitrogen.

In sedation of the *brain*, mental, as well as physical stimuli are occasionally requisite; but here all practical men are exceedingly averse to the exhibition of stimuli, from the great disposition which exists in this organ to inordinate reaction, from the danger of this secondary state of irritation, and from the local venous congestion, which is so frequently observed in sedations of the brain. Hence stimuli are only proper when sedation continues for a long period, or when symptoms of prostration come on and increase; even here, the physician should, if possible, restrict himself to stimuli to the surface and the rectum, but occasionally they must be freely addressed to the stomach, and every other accessible surface, for the preservation of life. Much however depends on the cause of cerebral depression, for in some cases, stimuli may at once be safely resorted to; for example, in sedation from moral causes, moral excitants are of great value, and much may be effected by diversifying the objects of sentiment and reflexion, and by exciting, if possible, the exhilarating passions.

In sedation of the *stomach*, much judgment is required in the management of stimuli, indeed the constant danger is, that the organ shall be over-stimulated by the aliment and drinks injudiciously taken. Hence the bad consequences alluded to, are exceedingly aggravated. Very moderate stimulation therefore from food should be most rigidly

enjoined, while certain artificial tonics and stimulants may be occasionally administered, especially those which facilitate the natural secretions of the mucous membrane.

Similar observations are applicable to sedation of the *intestines*, whether the mucous or muscular coat, or both, be involved. When the secretions and excretions appear natural, but there is deficient excitement of the muscular tissue, moderate stimulus may be afforded by suitable dietetic articles, by enemata and suppositories, and occasionally by mild eccoprotic medicines. Constipation, however, is often dependant on the absence of bile, supposed to be the normal stimulus of the intestines, and is one of the consequences therefore of diminished activity in the hepatic functions.

In sedation of the *liver* appropriate stimuli should be steadily administered, so as to reëxcite its secretions, and thus furnish the aliment with a fluid, probably necessary for its suitable digestion, afford a healthy excitant for the bowels, deprive the blood of noxious ingredients, and prevent the evil consequences of congestion of the portal system. Such stimuli are presented in small and repeated doses of ipecacuanha, antimony, soda, potash, and especially of mercury. Emetics and cathartics are useful as excitants of the biliary secretions, from direct and indirect influences through the medium of the stomach and bowels. It is most interesting, and often surprising, to observe how rapidly and completely minute doses of these stimuli will in some cases restore healthy secretions, relieve the præcordial oppression, arrest nausea and vomiting of bile, or serum, or even of blood, and allow the animal and organic systems to react healthily and agreeably from the horrible depression into which they had been thrown. The patient and the physician rejoice together.

3. *General stimuli* are often required to restore the system from a state of general sedation. They should be accommodated to the peculiar circumstances of the case, bearing in mind not only the apparent state of the patient, but the nature and operation of the depressing agent, the presence or absence of much vital power, the degree of local congestion, the disposition to react, the tendency to prostration or collapse, &c.

The reanimating effects of heat to individuals torpid from cold, and the influence of volatile and alcoholic stimuli, of warm beverages, of hot baths and fomentations, are familiar to all. Where there is debility, or actual loss of power conjoined with sedation, stimulants must usually be assisted by the slower but more permanent effect of nourishing diet and tonics, by which power is increased, so that action can be sustained.

In those unfortunate cases where much action is excited in a system greatly debilitated, the indication is very clear to diminish action but to increase strength, but the difficulty of fulfilling the indication is exceedingly great, for tonics and nutriment necessary to recruit the powers of the patient, often aggravate the excitement, and the sedatives for diminishing action often lessen strength. The judicious physician, however well-instructed in this delicate state of the system, and in the *modus operandi* of different sedatives, can very frequently succeed in fulfilling these apparently opposing indications of diminishing action and affording strength.

In those peculiar states of the system where there is general depression of organic life with excitation of the cerebro-spinal nervous system, as in mania a potu, the narcotic stimulants are the appropriate excitants, increasing, as is well known, the circulatory and capillary action, and diminishing nervous irritation, hence the suitability of opium and alcohol, so much and so successfully employed.*

In cases of nervous depression, where the organic life is little concerned, moral treatment is usually demanded. Hence, in hypochondriasis great attention is requisite in regulating or directing the intellectual and sentimental operations of the mind, although few cases will perhaps be found in which the organic actions do not also require assistance from the medical adviser.

The remedies now alluded to may be considered as those appropriate to sedation, but particular attention must often be paid to the consequences of depression, which frequently demand a class of remedies apparently of an opposite character, viz.

3. *Evacuants*.—It has been shown that sedation, under particular circumstances, and in certain organs, causes venous congestion, and that this congestion increases the depression, and resists the natural tendency to reaction even when assisted by local and general stimulants. Hence, a new indication is presented, to unload the oppressed organ of its venous blood. This may often be effected by general bleeding, which, on the principle of derivation and revulsion, relieves the suffering viscus of its inordinate quantity of blood, and thus allows the natural powers to react—the obstacle or load being removed. This is not a mere theoretical deduction from premises laid

* The influence of alcohol in causing and curing mania, shows the importance in medical philosophy of distinguishing between direct and indirect effects of medicinal agents. It gives rise to delirium tremens not directly but indirectly; it cures not by an indirect but direct agency.

down, but a practical truth of the utmost importance. Perhaps there are few occasions in which a medical man enjoys more real satisfaction than on beholding the beneficial effects of the abstraction of blood in congestions of the brain, lungs, or liver; when the lividity of the surface, the turgescence of the face and neck, the stupor or convulsions, or the thoracic or præcordial oppression, the cold and damp surface, the weakness and failing of the pulse indicate that the unfortunate patient is in vain* struggling for a prolonged existence. If a large vein be now freely opened, the blood, of a very black colour, will escape at first guttatim; but in a short time, a dark-coloured stream will trickle down the arm. The pulse will now become fuller, the heat of the surface be augmented, and the symptoms of oppression be diminished, and much time will not elapse, in favourable cases, before the blood will be poured forth with great momentum, of a bright, almost arterial colour; the pulse is now full and developed, and all the symptoms of congestion are entirely relieved. The whole organism reacts under the indirect* effects of bleeding. Such cases are seen in many of the forms of hysteric and infantile convulsions; in cases also of pulmonary engorgement from deficient supply of oxygen, or some disturbance of the nervous influence, as in hysteria, and very frequently in the engorgements of the abdominal viscera in the diseases formerly alluded to. It is on the same principle that bleeding has been found useful in the cold stage of fever, and in the epidemic cholera, in both of which there is general sedation with venous engorgement, and experience has abundantly proved that without this evacuation, the most potent and diffusible stimuli will frequently prove inefficacious in causing a reaction, which after the loss of blood could easily be excited. Stimulants therefore and evacuants should be conjoined in such cases; for although opposing remedies in their direct agency, yet under the circumstances presented, stimuli have a direct beneficial effect, which is facilitated indirectly by the loss of blood.

General bleeding is the most powerful and useful of the evacuating remedies, but good effects may often result from leeches and cups, often also from emetics, diaphoretics, and cathartics. The last are exceedingly useful in most of the portal congestions, by their unloading so directly the vessels concerned, and, at the same time, facilitating the biliary and other secretions. Respecting however all evacuating remedies, particularly bleeding, great caution, directed

* Some of the *verbal critics* of the day would hence call bleeding a stimulating remedy.

by experience and judgment, must be carefully exercised. The object is to facilitate reaction, but if this should not occur, the direct depressing influence of the loss of blood will still further diminish not only action, but power, and thus hasten the unfortunate termination. To particularize the cases in which the evacuating practice may be adopted, is impossible; the physician must learn at the bedside the numerous but indescribable appearances and sensations which indicate that the power of reaction is not entirely effaced, and irrecoverable prostration not fully established. It can only be observed, in general, that where congestion has suddenly occurred independently of any great previous debility or loss of the circulating fluids, where there is sedation with oppressed, but not depressed strength, then bleeding promises its best influence, and, assisted by external and internal stimulants, will very often reward the ever-anxious, but scientific physician, with the life of his patient.

ART. VIII. *On the Exclusion of Light as a Means of Preventing the Pitting in Small-Pox.* By JOHN M. W. PICTON, M. D. of New Orleans.

A number of patients labouring under small-pox were admitted into the Charity Hospital of New Orleans during the year 1830. They were placed in a part of the establishment detached from the main building, and made to occupy separate apartments in the lower story. There are large windows in each apartment of that hospital, secured by iron bars and close shutters; also an aperture in each door, (opposite to the window,) about twelve or fourteen inches square, and likewise secured by strong wires, or small bars; so that, when the shutters formed what is termed the bow-window, there was afforded a constant current of air, which indeed might freely pass into the opposite apartment, independent of the accession derived from the intervening hall. The sun's light might therefore be excluded, and even at the meridian, the reflective power must be lost by the position of the building.

Thus arranged, each patient was subjected to the usual mode of treatment, and strict injunctions were given to exclude the light during the period of confinement. Of the individuals thus situated, and who were discharged, not one exhibited a pit or mark upon the body. Some had a slight eruption, and detached, others more diffused, though quite distinct, and the rest of the confluent form. The latter passed through the maturative and desiccating stages. And in the

two former the eruption apparently received a check between the seventh and ninth days, without any of those unpleasant symptoms which accidental causes under other circumstances seem to induce.

Although disposed to regard the results of these cases with uncommon interest, as tending to show the beneficial tendency of exclusion of light in preventing the pitting, yet I could not feel satisfied until other examples should be presented beyond the walls of the hospital. The prosecution of my investigations was, however, interrupted by leaving the city. Upon my return in March, 1831, I renewed my observations, and endeavoured to extend my opportunities. In June, a friend having a case of small-pox under his care, at my request, obligingly consented to adopt the mode previously pursued in the Charity Hospital.

In August ensuing, three cases of variola occurred in Girod street, in the suburb of St. Mary, which were kindly confided to my management by another medical friend. In these instances, I gave precise directions with regard to the position of each patient, in order that they might enjoy the influence of a free circulation of air, and particularly enjoined the exclusion of light. I have every reason to believe that they were sedulously attended to. In two of these, the eruption appeared in the distinct form, and in the third, about fourteen years of age, papulæ were thickly diffused over the face and breast and superior extremities, evidently exhibiting the preparatory condition, to a full development of the confluent variety. They disappeared however on the fifth day, and rapid recovery followed. The two former passed through the different stages without a trace remaining.

These facts seemed to corroborate my most sanguine hopes, yet such is the scepticism we intuitively cherish, even in opposition to apparent indisputable impressions upon the senses, that I cannot consent to record them as unequivocal evidences, that "light" exercises such energetic affinities with, or modifications over the diseased actions of vitality, as to render it certain that we can take advantage of that knowledge in our curative means. Notwithstanding this reluctance, allow me to ask for its probability for a moment, then we must be convinced by existing analogies, that our views cannot be circumscribed by the consideration of variola alone; but they may embrace the extensive range of all the eruptive or cutaneous affections. If it should thus prove capable of arresting an eruption, or even an efflorescence, or the consequences of ulceration, it will, at least, have the effect to tranquillize many of those who are led to anticipate the period of convalescence, as one of signal disfiguration and disgust.

ART. IX. *Observations on Arsenic.* By J. K. MITCHELL, M. D. Lecturer on Medical Chemistry in the Philadelphia Medical Institute.

FEW subjects have been treated of more frequently or elaborately than that of arsenic, and yet few have been left, by the conflicting opinions of eminent chemists and medical jurists, in a state of greater uncertainty.

The *specific gravity* of regulus of arsenic is stated by some writers to be 5.7,* by others, 8.31.† Its subliming temperature is variably stated between 324°‡ and 356°§ Fahrenheit;|| and the only opinion in which, as to this point, authors agree, is that arsenic is *the most volatile of the metals.*¶

The white oxide of arsenic, (arsenious acid,) has been the subject of equal discordancy of opinion. While BERGMAN, CHRISTISON, THOMSON, &c. fix its vaporizing temperature at from 351° to 383° Fahr. BERZELIUS says that it begins to sublime at nascent red heat;** an opinion in which he is joined by THENARD.

Not less discrepancy is observed in the statements of authors relative to the *taste* of the white oxide. Bergman, who was among the earliest of good writers on arsenic, says, "It slowly excites upon the tongue an *acid* sub-dulcid taste."†† CHRISTISON and ADDINGTON affirm that it has little or no taste, while FODERÉ, BERZELIUS, and many others, ascribe to it sharpness, acridity, and pungency.

Its solubility has been totally denied by FISCHER, of Breslau, while GUIBOURT dissolved ninety-seven parts of the transparent oxide in one thousand parts of boiling water, which retained eighteen, (two per cent.) on cooling, while the same quantity of boiling water dissolved one hundred and fifteen parts of the opaque variety, and retained twenty-nine, (three per cent.) on cooling.

Since properties so easily subjected to the test of experiment have remained undecided, notwithstanding their importance, we may readily suppose that medical jurists have made diverse statements also respecting the validity of the various tests, the pathological effects, the train of symptoms, and the *modus operandi* of this potent poison. I cannot at present enter on the examination of *all* the points of dif-

* Berzelius, &c. † Bergman, Henry, &c. ‡ Bergman, Berzelius, &c. § Christison, &c.

|| Paris and Fonblanque stated it at 540° Fahr. on which the critic in the *Ed. Med. and Surg. Journ.* Vol. XXI. p. 422, contains this observation—"All the best modern authorities state it to be only 356° Fahr. and no chemist, so far as we know, has fixed it higher than 388°."

¶ T. Thomson, Silliman, &c.

** Chimie, Tom. II. p. 429.

†† Octavo. London, 1784. p. 288.

difficulty offered by this subject, but shall confine myself to a few, believing that it will be hereafter in my power to discuss the remainder.

Having observed that the metallic arsenic always occupied the part of the glass tube nearest to the flame, while the arsenious acid formed during the process of reduction, or which escaped unaltered, concreted on a part considerably higher up, I naturally inferred that metallic arsenic is less volatile than arsenious acid. To satisfy myself I performed the following experiments.

Into two tubes open at one end, and sealed and blown into a bulb at the other, were put equal quantities of metallic arsenic and white oxide respectively. These bulbs, and that of a good Fahrenheit's thermometer, were immersed in cold linseed oil, so as not to touch the bottom of the vessel, and a spirit lamp being placed beneath, heat was gradually applied. At 425° , by two experiments, the arsenious acid became visible on the sides of the tubes at a point about one-fourth of an inch above the surface of the oil. In the tube containing the metal the quantity of oxide seemed much smaller than in the other. At 560° no metallic arsenic or black oxide being visible, the process was closed, because of the insufferable fumes from the oil.

Mercury being substituted for the oil, other similarly prepared tubes were immersed in it, heat applied, and the same results obtained.

Mercury being made to boil briskly, the bulb of a thin glass tube containing bright arsenic was suddenly immersed in it, with the effect of producing a little sublimed arsenious acid; *but no metal was sublimed.*

Into zinc just fused was plunged a similar tube, with the effect of producing some arsenious acid and an umber ring; but no bright arsenic was sublimed.

As the zinc declined in temperature, and was just about to lose its fluidity, two other tubes containing arsenic were plunged into it. Neither sub-oxide nor metal was elevated, but as usual some crystals of white oxide were observed.

Into a glass tube, partially imbedded in a crucible full of sand, and heated to visible redness, was dropt a small piece of bright arsenic just *at the moment* when, in the dark, the imbedded part of the tube ceased to be luminous. No metal was sublimed.

The same experiment being in progress, the metal was thrown in, while the redness at the bottom of the tube was distinctly visible in the dark. A very little mettles sublimed.

These experiments conclusively demonstrate that the temperature at which arsenic is volatilized, is a *red heat visible in the dark*, a degree of heat nearly three times as great as has been supposed by the author who rates it the highest. They also show that the point of sublimation of arsenious acid, is higher than stated in most treatises, but

not nearly so high as indicated by Berzelius and Thenard, and greatly below the subliming temperature of the metal itself.

As in mixed solutions, such as we usually encounter in cases of death by poison, liquid tests are not to be trusted, the reduction of arsenic to the metallic state is usually esteemed the only conclusive proof of its existence. Every recent writer in his turn, dwells with emphasis on the conclusiveness of this particular proof, and is solicitous to perfect the means of reduction. So refined have the processes for this purpose become, that exceedingly minute fractions of a grain of arsenic have been recovered from the stomachs of those who, having been poisoned, had evacuated almost all the deleterious matter before death.

The method which I have recently followed is this. Boil the stomach, cut into small pieces, along with its contents, in a pint of water, strain, filter, boil the filtered liquor down to half a pint; filter again, add a measured ounce of pure hydrochloric acid, boil, filter, and precipitate while hot, by gaseous sulphuretted hydrogen; set aside to settle, pour off the supernatant liquid, add water to the precipitate, and pour off that, when subsidence is completed. The muddy and liquid matter at the bottom, being poured into several watch-glasses, should be thoroughly dried at a temperature not exceeding 300° Fah. A small portion after being mixed with black flux should be tested in a glass tube, by reduction. If no *emphysema* obscure the process it will succeed if there be present the fiftieth of a grain. As in two processes thus conducted no obscuration affected the tubes. I believe a case could scarcely occur in which such an effect would be produced. But if it did, then the sulphuret should be treated, as indicated by Berzelius with melted nitre, lime-water, charcoal and heat. If no result is then obtained, the stomach and the matter left on the filters should be treated with nitro-muriatic acid, which will dissolve any insoluble arsenical preparation likely to be found in a case of poisoning. The solution thus obtained always contains a great quantity of animal matter, which may be destroyed by boiling to dryness, treating again with nitro-muriatic acid, evaporating to dryness, boiling with a small portion of water, treating with lime-water, and decomposing the arseniate of lime by charcoal and heat.†

When by any process of reduction the metal is sublimed, the following phenomena are observed. If the heat is slowly applied, and that method renders the glass less frangible, there appears at first a white ring of arsenious acid placed at some distance from the flame,

• In very minute investigation, filters should be avoided after the precipitate is developed.

† By the process with muriatic acid and sulphuretted hydrogen, I obtained,

soon after, the whiteness disappears, and an umber, and finally a jet black and shining ring replaces it. Nearer to the flame subsequently appear a few metallic-looking spangles, which rapidly increasing, cover the whole surface, and form a bluish-white metallic ring of considerable splendour. The metallic ring is often continuous with the black one, though not unfrequently, there is a visible portion of unoccupied glass between them. In some instances, there is only a black ring, and in others the upper part of the white ring retains its colour to the close of the experiment; so that we may observe, in the same tube, a white, a black, and a metallic ring either separate or united at their margins.

As in some cases where arsenic is present, we have only a black ring, its true character becomes a subject of interest. It is not a little surprising to find in authors so few allusions to the black ring, which is so uniformly present. SCHEELÉ mentions in one place that "a shining regulus was obtained mixed with a little arsenic, (i. e. arsenious acid,) and charcoal dust." CHRISTISON makes this allusion to it "whenever the dark crust begins to form the tube should be held quite steady." What he esteems the dark crust is not stated in that place, but from passages in the papers of Paris, Christison and R. Phillips, we may presume that they supposed it to be carbonaceous. The latter, in a comment on Christison's opinion, that charcoal was not necessary to a certain method of reduction, says "if this were fact, it would be an *important* addition to our knowledge; for it would save the introduction of charcoal into the tube, and prevent it from being mistaken for sublimed arsenic."† In the Edinburgh Medical and Surgical Journal, Vol. XXII. p. 80, Mr. Christison uses these words, "when the watery vapour has nearly ceased to be disengaged, a black vapour rises and condenses on the tube. This is charcoal derived from the decomposition of the animal or vegetable matter, and carried along by the steam and gases. The arsenic does not begin to sublime till the discharge of carbonaceous vapour has nearly ceased, and it always condenses lower down." PARIS, in his Pharmacologia, observes that, "it has, to my knowledge, happened to a medical person, by no means deficient in chemical address, to

and now possess, eight characteristic crusts in so many tubes, from one grain of arsenious acid left for upwards of three months in a stomach and intestine extracted from a dead body and then poisoned for the experiment. After the sulphuretted hydrogen had separated its precipitate, the supernatant liquid was boiled to dryness, and found to have contained an ounce and three grains of organic matter. One of the tubes thus incrustated contains enough of arsenic to line several tubes with a visible coating.

† Ann. of Philos. 1825, p. 299, Vol. X.

ascribe to the presence of arsenic that which was no other than a *film of very finely divided charcoal*." Berzelius appears to have been the first to suspect the true character of the dark ring. He observes, in treating of his supposed sub-oxide, that "the sub-oxide is obtained in the reduction of arsenic; for that which sublimes in the first instance, is *sub-oxide*, of which very thin coats show, by transmitted light, a brownish colour."* When this author treats of sublimation in medico-legal investigations, he makes no mention of the brown or black ring, so that a person unacquainted with other parts of his work, and consulting him as to the method of detecting this poison by reduction, would not discover any clue to an explanation of appearances, which, with his previous information derived from all other good sources, would either confuse or mislead him. As too, Berzelius speaks only of the effect of transmitted light, and as the ring is frequently non-diaphanous, the inquirer would scarcely derive from his account the necessary information. For these reasons I have supposed the renewed examination of the subject of arsenical crusts might not be unprofitable.

Notwithstanding the high authority of Berzelius, most chemists persist in esteeming the sub-oxide a mere mixture of metal and white oxide. Two reasons in addition to those stated by Berzelius, render the matter less doubtful. 1st. The sub-oxide is more volatile than the metal, always occupying a higher part of the tube. 2d. A heat 100° above the subliming degree of the white oxide, does not revive the metal, although, if it were such a mixture, the arsenious acid would readily separate, and leave the regulus behind. The following experiment will prove this truth. A tube which had been plunged into melted zinc, when just about to harden, contained white oxide and an umber ring. When subsequently placed in boiling mercury, the white oxide was immediately sublimed, but the dark ring remained for eight or ten minutes, gradually disappearing as it became more volatile by passing into the state of white oxide.

In another experiment the blackened part of the tube was cut out, and placed in another tube, and subjected to a subliming heat, by which there were formed reguline arsenic, white oxide, and a much smaller quantity of sub-oxide. The tube having been sealed at its open end also, the black ring was chased about with a small spirit lamp, until nothing remained but regulus and white oxide. After that, the brown oxide could not be reproduced, evincing thus, that it is not a mixture of metal and white oxide, but a true chemical compound.†

* *Traité de Chimie*, Tom. II. p. 428.

† If a tube containing pure regulus of arsenic be hermetically sealed, and
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The best mode of producing the sub-oxide, is by *very suddenly* heating by the large spirit blow-pipe, a thin bulb, which contains either regulus of arsenic, or common fly-stone.

Although some writers ascribe the arsenical odour to the white oxide, undecomposed white oxide sublimes without any odour. *All* recent authority attributes the arsenical odour to the vapour of the metal, but from the following facts, it will appear probable, that Berzelius' sub-oxide is the odorous preparation. When a heat just below redness, or the lowest heat perceptible in the dark, is applied to a tube holding arsenic, no *metal* is sublimed; but there are produced white oxide. sub-oxide, and the arsenical odour. When also a piece of arsenic is heated until it continues to burn in the open air, and gives out a strong alliaceous odour, if an open tube be placed over it, so as to exclude the air, or if while burning it be dropped into a moderately warmed tube, no sublimed metal will be discoverable.

When we observe the totality of the phenomena of arsenical sublimation and reduction, the temperature, a low red heat, the elevation from a bed of carbon, the white, the brown or black, and the reguline rings, placed in a certain relation to the flame, and learn that these latter appearances are the result of the successive deposit of white oxide, sub-oxide, and metal, we naturally feel disposed to unite with Christison in the assertion, that "it may be *safely* laid down, that the appearances exhibited by a *well-formed* crust, are imitated by no substance in nature, which can be sublimed by the process for the reduction of arsenic;" or with Professor SILLIMAN, who says, that "the reduction of the arsenic is perfectly decisive, and if this proof is obtained, there can be no mistake."^{*} But the following experiments exhibit another view of that subject. A little powdered cinnabar was mixed with carbon, deposited in the sealed end of a glass tube, and held over the flame of a spirit lamp. In a few moments the "dark crust"[†] began to form. When sufficiently heated, the tube exhibited a brilliant metallic-looking ring, above that and continuous with it appeared a shining black ring, and over that could be perceived a white substance. So closely did these appearances correspond with those of a known arsenicated tube, that I distrusted the purity of the cinnabar, and could only assure myself of its true character by cutting off the tube, pulverizing the apparent metal, and ob-

partially immersed for an hour in boiling mercury, white oxide will be formed, and all the oxygen be consumed in its production. After that the spirit lamp will volatilize bright metal without any admixture of brown or black. • ⁴

* Elements, p. 192, Vol. II.

† Christison, p. 180. •

serving that it was unreduced vermilion where lustrous, a black powder where jetty, and minutely distributed mercury where white.

Even when the quantity used amounted to several grains, the semblance was so strong as to deceive experienced chemists, although tubes containing arsenic were offered for comparison.* How much more liable are we to mistake when the quantity is so small as the ¹/_{teath}, ¹/_{sixteenth}, or ¹/_{twentieth} of a grain. But in case, observes Christison, “any one *should* desire, notwithstanding what has been said, to have some further evidence of the nature of the crust, he may satisfy himself by subjecting it to the test of oxidation by heat.”† That test, suggested by Dr. TURNER, is, *according to our present knowledge*, deemed conclusive, when visible octahedrons are produced; but to succeed well, care must be taken to keep the heat low, to prevent union with the glass, and to avoid the dissipation of any of the minute portion of arsenical matter. After all, it is with a very little arsenic, more easily described than executed, because in general the white oxide, after formation appears as a diffused white powder, having no visible structure. When a very small quantity of cinnabar is sublimed, and again heated and chased about, it disappears entirely, and leaves behind only a white powder, adherent to the glass, and which to the eye seems exactly like the whiteness produced by similarly treated arsenic.

It is now made certain, that short of the extraction of a portion of matter from the tube *after* sublimation, and a determination of its character by additional experiments, we can arrive at *no certainty* respecting the nature of the contents. Faint marks of difference might be pointed out in the appearance of the tubes of arsenic and cinnabar, but to them it would be hazardous to trust. The assertion, therefore, of the eminent writers quoted, must be received with one qualification.

The more I examine the subject now before me, the more I become convinced that for the *ascertainment* of the presence of arsenic no single experiment is sufficient, and that the appearances of even the best marked and most characteristic crust are not an infallible, or *alone*, even a good test of the presence of that potent poison.

Whatever may be the degree of chemical proof, it may, and often does, receive confirmation from the phenomena of the living case and the dead body; and the physician, who is a chemist, may arrive at a decision of the question, which, as a chemist alone, he could not determine. After all, however, the common distrust of scientific testi-

* The smaller the tubes the more complete the deception.

† P. 183.

mony is not ill-founded. Extremes are said to meet, a truism illustrated by the fate of the subject before us, in which we see the confidence in the results of nice chemical research shaken alike by the prejudice of ignorance, and the power of a progressive philosophy. At one period scientific men trusted solely to the alliaceous odour; at another, to that and the tombac alloy; at another, to these and certain liquid tests. All these have been shown, by more careful research, to be liable to misconception, and an *experimentum crucis* substituted, supposed to be susceptible of no misapplication. *That* falls to the ground under the crushing wheels of an advancing science, leaving us, where common sense should have long since placed us, in an attitude of observation of *the whole ground* of each particular case, blindly confiding in no single proof, however strong, and yet reaching a justifiable and salutary decision upon the concurrent evidence afforded by a multitude of particulars, whose accidental coincidence would amount to a miracle.

ART. X. *Observations on the Use of the Hydrocyanic or Prussic Acid in Pertussis or Hooping-Cough.* By EDWIN P. ATLEE, M. D. of Philadelphia.

THE memoir of Dr. MAGENDIE, of Paris, presented to the Academy of Sciences of that city, November, 1817, on the uses of prussic acid in certain diseases, afterwards translated and published in the *Journal* of the Royal Institution of London, gave origin to numerous experiments, in different parts of Europe, in phthisis pulmonalis, irritable coughs, and nervous diseases. It was not, however, until the appearance of his second memoir,* published at Paris, 1819, containing additional researches, physiological and clinical, upon the employment of this powerful agent, that the profession in Europe and America were induced to place much reliance upon its curative influence.

About the time these researches were being made in Europe, the writer of these "observations" was a student of medicine in the University of Pennsylvania, and as additional facts were presented to the professional world through the journals here and abroad, he determined to apply the acid in cases of hooping-cough when a suitable opportunity presented. Statements, however, shortly appeared, giving accounts of so many fatal results from its administration under the

* "*Recherches Physiologiques et Cliniques sur l'Emploi de l'Acide Prussique ou Hydrocyanique,*" &c.

superintendence of judicious practitioners, that some of his elder and experienced brethren of this city deprecated its use altogether. Thus circumstanced, having just entered upon practice, although his own judgment did not forbid its use under proper regulations, he dared not to make an essay.

In the year, 1824, however, he had an opportunity of gratifying his wishes in the case of his own child, who, at about eleven months old, was attacked with hooping-cough.

Dr. GRANVILLE, of England, has reported favourably of the effects of the acid in this disease upon his own children—and believing his report, and feeling myself authorized to administer whatever my judgment indicated to be right to my own child, I gave her the following formula, viz. R. Acid. hydrocyanic, gtt. iv.; syrup. simplic. ℥ij. M. A tea-spoonful morning and evening. The second day she took the same quantity three times during the day, and so continued for one week, when she was entirely well. Except a dose of calomel and rhubarb, given previous to the taking of the syrup, she took nothing else.

The decided success in this case induced me to proceed in my experiments. From that time to the present, (3d month, 26th, 1832,) I have prescribed the acid, as hereafter specified, to children, from the age of six months to that of ten, fifteen, and twenty years, and to several adults, amounting in all to more than two hundred cases. The disease being radically removed in from four to ten days, or at furthest a fortnight.

During the recent prevalence of epidemic influenza, I found that when accompanied by hooping-cough, the acid was not efficacious in removing the cough, and evidently increased the catarrhal uneasiness. It was therefore not persisted in.

From the numerous cases in which I have prescribed the acid in hooping-cough, and an attentive observation of its powers in this appalling disease, when unattended by any other, I confidently recommend it to the medical profession. In no instance has it proved deleterious to my patients, but rather seems to have destroyed a previous predisposition to croup and catarrh.

The following is the course pursued. During the first, or what may be termed the inflammatory stage of the disease, I resort to the general depletory agents, if called on at all. Usually, however, parents seldom apply for medical advice until the second, or spasmodic stage, or that in which the *hoop* is clearly discerned. If, on inquiry, the bowels have not been freely evacuated, a full dose of calomel and rhubarb, according to the age and condition of the patient, is prescribed. If, to use the common phrase, “the child is much stopped

up with phlegm," emesis is produced by antimonial wine, which, when judiciously prepared, I prefer to any other emetic. After this, the syrup is given as follows:—

For a child six months old, one drop of the acid to one ounce of simple syrup. A tea-spoonful twice a day. If no uneasiness, dizziness, or sickness is produced within forty-eight hours, the same quantity is given three times a day. From six months to a year, the same may be given four times a day.

From 1 to 2 years of age, Hydrocyanic acid, gtt. ij. syrup, \bar{z} j.

2	3	do.	do.	iiij.	do.
3	6	do.	do.	iv.	do.
6	12	do.	do.	v.	do.
12	15	do.	do.	vj.	do.
15	20	do.	do.	vij.	do.
20	30	do.	do.	viii. to x.	do.

A small or large tea-spoonful being the dose in each case, repeated as often as close observation of its effects will warrant. I have never yet given it more than four times a day.

Having tried the imported acid, and found it entitled to little reliance, I have for the last six years prescribed that prepared in this city by our judicious chemists, FARR and KUNZI, according to the formula of Mr. BRANDE. It contains $4\frac{1}{2}$ per cent. of pure prussic acid of GAY LUSSAC, and is therefore not so strong as that recommended by M. MAJENDIE.

Believing that the acid might be efficacious in spasmodic asthma, I requested my young friend, Dr. ISAAC PARRISH, late resident student of the Philadelphia Alms-house, to try it. He accordingly prepared the syrup in the proportion of four drops to the ounce, and gave a tea-spoonful every two hours, with decided benefit. The patient experiencing great relief in a few hours. This case, he states, to have resisted any impression from the other ordinary remedies.

It is not my intention, in the present paper, to notice the statements of several practitioners in different sections of the union, who have, within a few years, administered the acid in hooping-cough, because, so far as I have examined their reports, the cases have been but few in which it was fully tried. A number of my brethren in this city and elsewhere, are, at my request, engaged in experiments with the syrup, in pertussis and other affections, from whom I shall, in due season, receive reports; my object at present is only to call the attention of physicians generally to the subject treated of, with the hope that their experience may furnish as pleasant results as my own.

Philadelphia, 3d month, (March,) 1832.

REVIEWS.

ART. XI. *Materialien zu einer künftigen Heilmittellehre durch Versuche der Arzneien an gesunden Menschen*, gewonnen und gesammelt, Von Dr. JOHANN CHRISTIAN GOTTFRIED JÆRG, Ordentlichem Professor der Geburtshülfe an der Universität zu Leipzig, &c. &c. Erster band. 8vo. pp. 500. Leipzig, 1825.

Materials to serve for a future System of Materia Medica, arranged, &c. by J. C. G. JÆRG, Professor, &c.

NOTWITHSTANDING the accessions to our knowledge of physiology and pathology for which we are indebted to the labours of our immediate predecessors and contemporaries, and they are undoubtedly neither few nor unimportant, it must, nevertheless, be confessed that they have not produced that improvement in therapeutics which might reasonably have been anticipated. This has arisen not so much from an obstinate adherence to antiquated dogmas, nor a neglect on the part of the profession generally to the rapid progress of our science, as from our actual ignorance of the real mode of operation upon the living system of the several remedial agents in daily use. We are, in fact, better enabled to arrive at a correct diagnosis of disease—to determine with accuracy the seat, nature, and degree of morbid action in any given case, than to direct with skill the appropriate remedies for its removal. While in regard to the first we reason from scientific principles established upon facts, in regard to the latter we have little better for our guide than mere empiricism. What physician, and we ask the question boldly; what physician, even the best informed, is able to determine, with any degree of certainty, the changes which any one remedy, administered during health or disease, will produce in the vital actions or properties of the several tissues? He may have formed to himself certain opinions as to its mode of action; but upon what data, other than bare speculations, are those opinions founded? The majority will be found to be without even this shadow of system, and to be directed in their plans of treatment merely by the fact, that in other cases, under apparently similar circumstances, the administration of certain remedies has been followed, very generally, by a cessation of the morbid phenomena.

In proof of the trifling improvement which the doctrines of the materia medica have undergone, in comparison with what has been effected for almost every other branch of the medical science, let us

refer to the latest of our systematic treatises. We there find still the same artificial and arbitrary classification of remedies—the same hypothetical definition of their several properties, almost the same rules for their administration as were adopted when pathology and physiology were in their infancy, or at the furthest consisted merely of a set of doctrines framed in the closet, and to which facts and accidental discoveries were made invariably to bend. Even the few particulars in relation to the properties of certain remedies, upon which light had been thrown by the investigations of an occasional experimenter, have produced but little change in the science of *materia medica*. If noticed at all, it is merely incidentally, while under the influence of a vicious arrangement and nomenclature their importance is but seldom recognised.

It has been, and still is, too much the practice to determine the properties of a remedy from some one of its more striking effects, as purgation, emesis, ptialism, &c. or its sedative or stimulating influence upon the actions of the heart or of the sensorium. The change in the vital actions of the tissues, upon the production of which either of these phenomena depend, are, in almost every instance, overlooked, or hypothetically assumed; and yet it is only from an accurate acquaintance with these changes that we can determine its power of replacing the existing morbid actions of a part by those of health; in other words, of determining the propriety or impropriety of its exhibition in any given case. In relation to a still larger class of remedies than those just referred to, our ignorance is even more profound. We talk fluently of tonics, astringents, antispasmodics, alteratives, and the like, but in no one instance can we be said actually to understand the action upon the living tissues of the articles included under these several denominations. Until we shall arrive at a knowledge of their effects, that is, of the modifications which they produce in the vital actions, the practice of medicine, so far at least as these classes of remedies are concerned, must partake more or less of empiricism and uncertainty.

It is well known that, at no very remote period, the whole practice of medicine consisted, first, in determining the character of a disease by ascertaining the situation, in some favourite system of nosology, of the group of symptoms in which its more striking phenomena were comprised; and secondly, of applying for its cure a set of remedies whose respective properties were indicated by the name under which they were arranged in the lists of the *materia medica*. This convenient system has, it is true, fallen of late years somewhat into disrepute. But while our pathological researches have assumed a more

elevated and scientific character—while our indications of cure are now governed less by arbitrary names and classifications of symptoms, yet, so far as it regards our practice, whatever partial improvement it may have experienced, it is still too much influenced by the names and hypothetical properties ascribed to our ordinary remedial agents.

We do not mean to say, that amid all the important changes which the natural sciences have experienced within the present century, the *materia medica* has not advanced a single step; on the contrary, many facts in relation to the remedies most frequently employed have been forced upon the notice of the physician by the results of daily experience. Thus, we have discovered that all remedies of the same class do not act in a similar manner upon all parts of the system; that in many instances the secondary effects are widely different from those which follow more immediately the administration of a remedy, and that, in nearly every instance, the nature and extent of the action produced by a remedy, are modified, in a very important manner, by the dose and manner of its administration, as well as by the condition of certain *organs* at the period when it is given. An acquaintance with these circumstances has had a very beneficial influence, in many points of view, upon practice. But as our knowledge of them extends scarcely beyond that of the bare facts, we are incapable of so extensive and important an application of it to the cure of disease, as we probably should, were we acquainted with the relative action of our remedies upon the different tissues, and the modifications which their effects upon each of these undergo by an augmentation or diminution of dose, and other variations in the mode of their administration. It is as much from the want of this kind of knowledge, as from any other cause, that the differences of opinion which we find to exist among even our best practitioners upon the virtues to be attributed to a given remedy, or mode of practice, in certain diseases, have originated, as well as the frequent disappointments which are daily experienced in the effects anticipated from the same remedy when exhibited in what are presumed to be parallel cases. There is, indeed, scarcely a single property which has been ascribed by one set of physicians to any one of the articles which are to be found in the lists of the *materia medica*, that is not positively denied to it by some other. Examine cautiously into the causes of this discrepancy of opinion, and it will be found, most probably, that in nine cases out of ten both parties are in the right—the difference between them resulting entirely from the different circumstances under which the remedy has been administered by each.

In referring a large class of those errors in practice, still pertinaciously adhered to by most physicians, to the vicious nomenclature of our materia medica, we can scarcely be accused of attributing too great an influence to a mere name. The history of human knowledge shows conclusively, that the nomenclature of every science has invariably exerted a most powerful influence in retarding or accelerating its progress; and a very little reflection will be sufficient to convince every unprejudiced mind, that so long as the names of our remedies indicate a hypothetical or imaginary property, or express only one, and that perhaps the most remote, and, in a therapeutical point of view, least important of their effects, so long will we be prevented from arriving at a correct knowledge of their true nature and properties, and of administering them skilfully for the removal of disease. If "words" in the strong language of a celebrated French writer, if "words are things," in other terms, if clearness and precision in language is the surest indication of the clearness and precision of our ideas, then in no science is a correct nomenclature more loudly called for than in the materia medica, where a mistake, originating solely from the influence of an erroneous name, may, nay has been the means of prolonging the sufferings, and of destroying the lives of thousands.

The whole science of materia medica presents, in fact, a field that will amply reward the labours of the industrious investigator. He who directs his attention to its proper cultivation, will contribute essentially towards the improvement of medical science.

In relation to the best plan to be pursued, in order to arrive at a correct knowledge of the actual properties of remedial agents, not a little diversity of opinion may be expected to occur. The different views entertained by physicians upon various points in physiology and pathology, cannot fail to influence their decisions upon the present question.

That much important information may be acquired by a close and careful examination of the operation of the remedies administered during the existence of disease, is unquestionable. This plan of investigating the remedial properties of the various articles of the materia medica, must, therefore, be kept constantly in view. Nevertheless, we can scarcely expect by it alone to acquire all the information necessary to establish those general principles upon which alone a correct system of therapeutics can be based. Even were we justifiable in *experimenting* to any extent with our remedies in a case of disease, the opportunity is possessed only by such as have the charge of a large hospital, for making that extensive series of compara-

tive observations from which any satisfactory results are to be anticipated. In the ordinary course of practice, remedies can seldom be administered for any length of time in such a manner as to enable us to decide accurately upon their respective effects. The treatment of very few diseases is confined to the administration of a single remedy, and when medicines are given in combination, or are had recourse to within short periods of each other in the same case, it is impossible to determine the effects referable solely to one or other of them. In many instances also the phenomena which occur subsequently to the exhibition of any given remedy, cannot with propriety be assumed as the absolute effects of that remedy, as they may have been very materially modified by the peculiar morbid condition, in that case, of the brain, the heart, the stomach, or some other important organ. Even the phenomena caused by the extension of morbid action to a tissue different from that originally affected, may occasionally be mistaken for the effects of the remedy employed, whereas the latter has had, in all probability, no influence in producing them.

• We are to recollect also that the operation of nearly all our remedies during disease is most generally studied under circumstances which render it very difficult, if not impossible, to arrive at any thing like a fair conclusion. In consequence of preconceived opinions, formed, as well in regard to the properties of a given remedy, as to the nature and phenomena of the morbid action it is administered to controul, it is not easy for the physician to determine, with any degree of certainty, what modification has been produced by it in the latter, nor whether, upon the whole, its effects have been beneficial, or otherwise. In a numerous class of diseases, the remedies employed, and to the action of which, the cure is confidently attributed, exert either no influence, or a positively injurious one. A cautious abstraction of all sources of irritation, whether moral or physical; bland diluents substituted for a solid and stimulating diet, as perfect quietude of body and of mind as can be obtained, and the observance of similar *negative* rules, has often been the means by which disease has been effectually checked, and the normal grade of action restored to the diseased tissue, when the medicines administered, and to which the beneficial result is solely ascribed, have either produced no effect whatever, or have tended to keep up the morbid action for a longer period than it would have continued had their use been entirely dispensed with. Clinical observations upon the effects of remedies, are hence liable always to so many sources of error, that even when made with the greatest degree of caution, they can be viewed only as partial and imperfect. The only

plausible means of completing and verifying such observations, the repeated employment, namely, of the same remedies in similar doses, and in the same class of cases, even were it capable of furnishing us with the desired result, is productive of too much risk to the patients, to permit it to be pursued to its requisite extent.

The absolute effects produced by our remedies upon the vital actions of the several tissues, and the modifications which these effects undergo by a difference in the dose and mode of administration, can be satisfactorily tested only by a careful investigation of the phenomena which result from their administration during health. It is this plan, that has been adopted and carried into effect by Dr. Jörg, of Leipzig, and the details, together with the results of which constitute the subject of the work, the title of which is placed at the commencement of this article.

We are aware that the information obtained by this means, leads us but one step towards an acquaintance with the remedial properties of our several remedies; it is however the primary and most important step. It furnishes us with positive data by which to test and correct the observations made upon the operation of the same articles during disease, and by establishing certain general facts in relation to the effects of our remedies, it will enable us to decide at once, and with very great certainty, upon the propriety or impropriety of their administration in any given case of disease. Thus, if it be incontestibly proved from its effects upon the healthy subject, that a certain article acts as an irritant upon the stomach, bowels, or brain—whatever may be its effects in relation to any one of the remaining organs—however important these latter may be for the removal of the existing disease, there are few enlightened pathologists who will not admit the impropriety of its administration, when the stomach, bowels, or brain is actually inflamed, or in a state approaching to that of inflammation.

By an investigation of the effects of remedies, exhibited during health, we shall be enabled to distinguish their comparative influence upon the vital actions of different tissues, a point very difficult to arrive at, by merely watching their operation during disease, and yet one of very great importance in determining their correct therapeutic application. In the same manner we shall be enabled to distinguish between the primary and secondary effects of a remedy, which, in many cases, are the very opposite of each other; as well as the difference in the impression which it produces upon one or other of the tissues, when these are kept constantly under its influence, by the use of small and repeated doses, and that which results from a single

maximum dose. Of the important practical application of these facts, and the prejudicial effects upon practice, caused by an ignorance or neglect of them, every experienced physician must be fully aware.

An intimate acquaintance with the action of our remedies, under the several points of view just referred to, will not only enable us to direct their administration for the cure of disease with a greater degree of success than heretofore, but, in all probability, it will place at our disposal new and effectual means for the removal of various morbid conditions of the tissues, which are now beyond our controul, or can be subdued only by subjecting other and important parts to the risk of disease.

It has been objected to experiments performed with remedial agents upon the healthy system, that they afford us no positive information as to the effects of the same agents in disease, inasmuch as their action "upon a diseased organ is essentially different from what it is upon the same organ when in a state of health." But is this proposition established by facts? Is it true, that the *nature* of the action which is produced by any agents upon a diseased tissue, is *essentially* different from what it is when the tissue is free from disease? We believe not. The action of a remedy may certainly be modified; we know, in fact, that it is, and to a very considerable extent, by the morbid condition of one or other of the tissues; but never does this modification extend so far as to amount to an actual change in the *nature* of the action produced. An article which produces, for example, a stimulant or sedative impression upon a healthy tissue, will produce a similar impression upon the same tissue when diseased, provided always the disease has not already produced in it disorganization. The susceptibility of the tissue to the action of a remedy may be greatly diminished or increased by its particular morbid condition, or the state of certain portions of the nervous system, but so far as it is susceptible to the effects of the article, these effects will invariably be the same, differing only in degree, from those produced by it during health. It is true, that the excitability of a part may be so far morbidly increased, as to cause the same articles which in its normal condition merely excited it to healthy action, to produce in it the most violent stimulation; this however so far from contradicting, confirms our general proposition. We may, therefore, without hesitation, assume it as an axiom, that the effects resulting from the action of any given remedy upon the healthy tissues, are to be assumed as the *positive* effects of that remedy, under all circumstances whether of health or of disease. For although these effects may be modified by the particular deviation of one or other of the tissues from their

normal condition, yet the nature of the action produced, is still the same in character, differing only in degree.

If it be found that a certain class of remedies, administered to an individual during health, invariably augments the activity of particular secretory organs, causing them to pour forth an increased amount of their respective fluids, it may safely be inferred that the same effect will be manifested by these remedies during a diseased condition of the system. If any difference is observed, it will be found to result from a change, not in the action of the remedies, but in the susceptibility of the organs to their influence. So likewise, if any substance shall be discovered to produce during health a sedation in the vital actions of the mucous, serous, nervous, or other tissues, this effect, we may be assured, will also take place from the use of that article, when the particular tissue is labouring under a morbid exaltation, or depression of its vital energies. All the objections which have been made to the plan of determining the properties of our remedies, from their effects upon a healthy individual, are, in truth, founded either upon erroneous views of physiology, or pathology, or upon inferences drawn from facts imperfectly or inaccurately observed.

There is one class of physicians who object to this plan of investigation, from a belief that all our remedies act only by producing a certain morbid impression upon the system of a less dangerous character than that constituting the existing disease, but which, at the same time, is capable of subverting the latter, and then ceases spontaneously. Hence they argue, that the desired effects, produced by our remedies, can take place, and their nature be judged of only during the presence of disease—that by the very same operation by which they subvert morbid action when this actually exists, they may even produce, when given during a healthy state of the organs, more or less of disease. From this error, has in a great measure, originated that mischievous perturbative system of practice, which, dignified by the appellations bold and decisive, has been pursued to so great an extent by the physicians of this country: and which, in numerous cases, so far from being adapted to effect a speedy and effectual cure, we have no hesitation in saying, is the means of fixing the existing malady more deeply in important structures, and of increasing very considerably its duration and fatality.

The great object which the physician should have in view in the cure of disease is to remove the existing morbid action, as speedily as possible; and at the same time with the least risk to those structures which are either not at all or but slightly affected. In many cases, instead of exciting a new and more friendly disease, all that is

necessary is to keep the part in which the disease is seated, in a state of complete rest, by abstracting from it as much as possible the natural as well as all accidental stimuli. In other instances the grade and extent of the morbid action is such, that it can only be promptly and effectually removed by the administration of such remedies as are adapted by either a direct or indirect action, to restore the disordered functions of the affected tissues to their normal grade. It is true that among the latter class of remedies are included some that operate by exciting or depressing the actions of certain portions of the system not involved in the existing disease; of these the only ones the remedial operation of which can in any manner be considered as dependent upon a morbid effect produced by them on the part upon which they act, are those termed counter-irritants or derivatives, and perhaps the contra-stimulants of certain Italian writers. But widely different is the operation of the whole of this class of remedies, from that revolutionary or perturbative effect upon which it has been supposed the remedial power of all the articles of the *materia medica* depends. This latter is supposed to consist in a certain morbid action produced by the different remedies throughout the whole system, including the diseased tissues, and in a great measure, if not entirely, distinct from that which takes place from the action of the same remedies upon the healthy system. Now, in no case does the primary operation of counter-irritants take place upon a tissue actually suffering from disease; while their effects both direct and indirect, are well understood, and identical with those produced by the same remedies in a healthy individual. It is only from our perfect acquaintance with their mode of action, and the certainty with which we can in general calculate, *a priori*, their effects, that we are enabled to apply them successfully for the diminution or removal of disease.

Although the plan of testing the remedial properties of the different articles of the *materia medica* by their effects upon the healthy system has been long pursued, and notwithstanding the observations collected in this manner are extremely numerous, yet few of them are calculated to afford the same practical inferences as those detailed by Dr. Jörg in the work before us. The older experimenters were often led into very gross errors by their misconceptions of many important points in physiology, as well as by their ignorance of the science of general anatomy; independent of which their conclusions are defective, from their having confined their attention exclusively to the remote operation of the remedies administered, overlooking entirely their primary and intermediate effects. The more recent observations of HAHNEMANN, although founded upon numerous and diversified experi-

ments, are so completely infected with his own peculiar views of pathology and therapeutics, that they are of little value to any but an adherent of the homœopathic school.

It was from a full conviction that much important information was yet to be acquired in relation to the mode of operation of our remedies, that the Leipzig professor was induced to establish a society for the express purpose of pursuing, under his superintendence, a systematic series of experiments with the leading articles of the *materia medica*, with the view of ascertaining their effects upon the healthy tissues; hoping to be enabled in this manner, as he modestly expresses it, to afford the ground-work upon which may hereafter be erected, by the labours of other experimenters, a more correct system of *materia medica*.

The society is composed of twenty-seven members; of these, twenty-two, including Dr. Jörg, are either students or practitioners of medicine; two are the sons of the professor, the one a lad of sixteen, and the other of fourteen years of age; and three females, the one forty-five, the other eighteen, and the third twelve years of age. The professor at the period when the experiments were performed was forty-five years of age, and the medical gentlemen associated with him were from twenty-one, the age of the youngest, to thirty-two years, the age of the eldest, a minute description is given of their respective constitutions, temperaments, &c. &c. which we do not think it necessary here to recite. All the members of the society were of regular and temperate habits, to which they closely adhered, while testing upon themselves the effects of the various remedies. Each remedy was administered in different doses to different individuals, or at different periods, and the effects produced by a given dose of an article upon each person are separately expressed, great care being observed not to confound the results obtained by the administration of different doses to the same or to different individuals.

In the prosecution of these experiments every thing appears, in fact, to have been carefully attended to that was calculated to ensure the correctness of the results. The whole undertaking confers great credit upon Dr. Jörg, and places in a very favourable point of view the zeal and industry of his associates. Of their joint labours, an account has been published by the former, under the unassuming title of "*materials towards a future system of materia medica.*" Of this work we have been enabled to procure only the first volume, and which is probably all that has yet appeared. It contains the experiments made by the society upon the effects of nitre, cherry laurel water, water of bitter almonds, valerian, serpentaria, the flowers and

root of the *arnica montana*, camphor, musk, castor, St. Ignatius' bean, *assafoetida*, opium, *digitalis*, and the tincture of iodine. The series of experiments performed with each of these articles is given in detail, and is followed by a summary of the general results derived from them, drawn up by Dr. Jörg.

In presenting to our readers a brief account of the work, we shall be obliged to pass over the experiments and confine our attention solely to the results. To enter into an examination of the former would require much more space than can be afforded for a single review, for it must be evident that any attempt to condense them within our narrow limits would scarcely be doing justice to the experimenters, while it would afford but little satisfactory information to our readers.

In our account of the general conclusions drawn from each series of experiments we can do little else than translate the words of the author. However desirable it might be to compare occasionally his statements with the opinions generally entertained in relation to the operation of certain remedies, as well as with some of the therapeutical precepts of the physiological school, we dare not attempt it on the present occasion.

Nitre.—From the experiments made by Dr. Jörg and his colleagues with purified nitre, in various doses, he believes it may be inferred with certainty, that it acts as an excitant upon the kidneys, the alimentary canal and the skin. By its action upon the kidneys it increases the natural secretion of urine in quantity and quality. Its diuretic effects are, therefore, the most certain of those to be anticipated from its use. Acting as an excitant upon the whole of the alimentary tube, it modifies to a greater or less extent the functions of that organ and those which are auxiliary to it. It causes first an increased secretion of saliva, followed by a dryness of the mouth, the fauces and œsophagus; it occasions also a sense of thirst, increased appetite, and pain of the stomach, similar to that arising from an inflammatory irritation of that organ; eructations, (in large doses vomiting,) a sense of bearing down or of cutting pain of the small intestines, flatulency, with discharges of wind, diarrhœa, and occasionally when the operation of the remedy takes place more especially upon the small intestines, the kidneys or the skin, constipation. It is evident, however, that the nitre acts likewise upon the large intestines, its use being so commonly attended with an inclination to stool without any evacuation from the bowels being produced. Its action upon the skin, in exciting an increased exhalation, was not found, in the experiments performed by the society, very constantly to follow its administration. Whether, however, the nitre exhibits its threefold operation upon the kidneys, skin and

alimentary canal, or its effects are confined more especially to a single one of these organs, its administration, in moderate doses, is never followed by any secondary effects, nor does it influence directly any other organs than those enumerated. It gives rise to vertigo, pain in the head and delirium, only when taken in excessive doses. The immediate effects produced by this article have deceived the profession as to its real properties, and have caused it to be directed in cases in which it can either do no good, or is altogether improper. Thus, when a portion of nitre is swallowed immediately after it has been dissolved in water, there is experienced a sensation of coolness in the fauces and œsophagus, and frequently in the stomach, also, which continues for several minutes. It is, however, invariably followed by the effects of the remedy already enumerated, particularly by heat and dryness of the parts in which the sense of coolness has been felt, which latter are always greater in proportion as the first has been most marked. The slower also the pulse is rendered by the cooling effects of the article, the more rapid it becomes subsequently. Hence, it is evident that nitre cannot with propriety be considered as an antiphlogistic; its action as an irritant upon the digestive organs, the kidneys and the skin, precludes the possibility of its producing any beneficial modification upon tissues labouring under inflammation. All substances which augment the activity of the secretory organs, predispose these to inflammation, whenever from any cause they act upon them with increased intensity; nitre undoubtedly possesses the first of these properties, hence it must necessarily possess the second, if administered in large doses, or under improper circumstances. Inflammation of the stomach and intestines, has, it is well known, actually resulted from its use. Without stopping to inquire whether this article acts upon the digestive organs in a chemical or dynamic manner, a distinction which it is impossible to make in the living body, I must insist, Dr. Jörg remarks, that it can no more be ranked with the class of antiphlogistics than can arsenic. • From the very circumstance of its exciting to increased action the three great secretory organs, it is reasonable to conclude that, to a certain degree, it excites also the nervous and arterial systems; so certain am I, he adds, that it does so act, that I am convinced its prolonged use would be decidedly injurious, but especially to the digestive and assimilatory organs.

We have seen that the nitre acts as an excitant upon the skin, the kidneys, and the alimentary canal, and being aware that diuretic remedies excite likewise the internal organs of generation, especially the nitre, which increases the action of the two secretory organs in the more immediate neighbourhood of the former, it must be evident.

that it cannot with propriety be administered in inflammatory affections of the genito-urinary apparatus. When, likewise, we recollect that, generally speaking, a remedy which is given during the existence of those diseased conditions of the tissues which it has a tendency itself to induce, acts injuriously, even in minute doses, by augmenting the intensity of the disease, their propriety of prohibiting the use of nitre in all genuine irritations or inflammations of the abdominal organs generally, will be perceived at once. The nitrate of potash is contra-indicated also in those cases in which the skin is the seat of irritation or of inflammation, whenever it cannot be administered in such a manner as to occasion a derivation, by its action upon the intestinal canal or the kidneys. As a purgative, the operation of the nitre is very uncertain; it is in every respect inferior to many other articles of that class. As a diuretic in the greater number of dropsies, we have other remedies much more efficacious, and which do not, like nitre, where its use is continued for any length of time, produce a prejudicial effect upon the stomach and bowels. In cases, however, where the effusion of fluid has been the result of an inflammatory condition of the serous membranes, nitre will frequently be found a valuable remedy. As a diaphoretic, little dependance is to be placed upon it.

When, however, we desire merely to excite by it the actions of the intestinal canal and the genito-urinary apparatus, without reference to its secondary operation, the remedial effects of the nitre will be advantageously exhibited. Thus, in all the inflammatory affections of the head, either internal or external, of the throat, and, occasionally, of the chest, it may be administered with good effects. As it does not act when given in small doses upon the cerebro-spinal apparatus, it is a useful remedy in the encephalitis of children, and may be employed instead of calomel, from the excessive use of which, in such cases, so much injury has been produced. From the experiments made with the nitre upon the female members of the society, it is presumed, that in many instances it will be found a very excellent emmenagogue. In the dose of from three to five grains, repeated morning and evening, the nitrate of potash will be found to produce a moderate excitement of the digestive and urinary apparatus. Occasionally it will, however, require from eight to ten grains of the remedy to produce this effect, which is indicated by flatulence, and an increased desire to urinate. pp. 43 to 52.

Cherry laurel water.—The article made use of in the experiments of the society was prepared according to the Saxon Pharmacopœia, by distilling three pounds of liquid from a mixture of six pounds of

water, one ounce of rectified alcohol, and one pound of fresh laurel leaves chopped fine. The laurel water thus prepared was found to act in very different degrees upon different individuals. In some of the members it required four times the dose, that it did in others, to produce the same symptoms. Its ordinary effects were a heavy, pungent, and deep-seated pain in the head, principally at the forepart, about the region of the optic nerves; a numbness of the whole body; relaxation of the pulse in proportion to the pain of the head; lassitude; inclination to sleep, or even somnolency; feebleness of the muscles, especially those of the thighs; disinclination to exertion; an itching and tickling at the larynx, as in the commencement of inflammation of this part; frequent cough, and an increased secretion of tough mucus into the trachea. Administered in small doses, the effects of the laurel water continued only for two, three, or four hours, but in larger doses, for six, eight, or twelve hours, including also its secondary effects. The irritation of the larynx, however, continued often for many days.

While, in its immediate effects, the laurel water produces a prompt and transient excitation of the brain, a turgescence, either dynamic or material of that organ, followed by numbness and tensive pains of the head, its secondary effects, such as diminution of consciousness, relaxation of the pulse, and general lassitude of the body, never fail to occur. It is from these last effects alone that the remedy has been assigned its place in the *materia medica*; but we must recollect that they cannot be obtained without a preceding momentary exaltation of innervation. It is on this account, Dr. Jörg conceives, an improper prescription in cases of encephalitis, or whenever congestion of the brain is to be apprehended. It is useful only in inflammations of the abdomen, and of the genital apparatus, or rather in cases in which the sensibility of these organs is exalted without inflammation. He believes also that it will be found injurious in inflammatory affections of the lungs, in consequence of its exciting an irritation in the larynx and trachea, producing cough, and causing a dryness of the fauces. It is especially beneficial in those diseases of the genital organs of the female, which are accompanied with augmented sensibility, whether inflammatory or not. In the primary stages of scarlatina, and in puerperal fever, when the brain exhibits symptoms of disease, the laurel water is an improper remedy. It must be evident that this article can be employed only with the greatest caution in spasmodic and convulsive affections. In all diseases of this class, depending upon an excitation of the brain, or upon a general or partial compression of that organ resulting from an engorged state of its ves-

sels, the laurel water will be injurious. From the different manner in which the remedy acts upon different individuals, great circumspection is demanded in its use even in those cases in which it is demanded. Dr. Jörg is of opinion that we may safely prescribe it in doses of from three to twenty-four drops, repeated, according to circumstances, from two to four times a day. It is to be recollected that the article rapidly loses its strength, particularly when the vessel in which it is contained is frequently opened. pp. 71 to 76.

Water of bitter almonds.—This preparation was found to be less active and certain than the preceding article, though it acts in the same manner. p. 81.

Hydrocyanic acid.—The prussic acid, obtained according to the plan of VAUQUELIN, was taken by several members of the society in the dose of from one to three drops in an ounce of water, and in that quantity was found to occasion tense pains of the head, and a troublesome itching of the throat, resembling the sensation which many persons experience after having eaten freely of dry nuts. Experiments were likewise made with this acid upon cats, rabbits, frogs, and crows, and after death it was ascertained by dissection that the hydrocyanic acid had invariably decomposed the blood, which, by the effects of the poison, is made to assume a venous character, and to accumulate in the veins and right cavities of the heart. In order the better to establish this fact, Dr. Jörg placed under a microscope a living frog, in such a manner as to expose a portion of its mesentery, in its mouth was then introduced the acid. As death did not take place until fifty-six minutes after the first dose of five drops, and about thirty-five minutes after the second dose, full time was given for a minute examination of their effects. After the first dose the blood continued to circulate regularly for several minutes; it passed more quickly through the arteries, and more slowly through the veins. At the end of about ten minutes the course of the blood in the veins became still slower, in the arteries it continued the same, and did not alter for eight or ten minutes subsequently. There then occurred from time to time a stasis in both sets of vessels, but this happened more frequently, and continued much longer in the veins than in the arteries. On the approach of death, retrograde movements of the blood in the former took place, but of short duration. About fifteen minutes after death the blood in the veins had assumed a violet hue, while at the commencement of the experiment it was of a bright red. In the artery, on the contrary, the blood, which had been also of a bright red, became pale, almost white. The artery itself became more contracted, while the size of the veins was unchanged. The

blood now ceased to flow, at first in the capillaries, and a few moments after in the veins, while the artery continued still to move on its contents, which were nearly colourless, in jerks. Finally, the motion of the artery ceased, and the entire cessation of life occurred—the animal not having, however, exhibited the least evidence of sensibility in any part of its body for fifteen or twenty minutes previously. Repeated experiments of a similar nature gave the same results. From the series of observations upon the effects of the hydrocyanic acid made by himself and colleagues, Dr. Jörg draws the following conclusions. This substance acts in a very prompt and violent manner upon the brain and nervous system. Its effects are more prompt and decided upon the encephalic nerves than upon those of the ganglionic system. The first momentary excitation of the brain and nerves, is sooner or later followed by depressed innervation or by death. When it does not destroy life at once, it occasions an inflammatory irritation of the trachea, but especially of the larynx. In some cases it would appear also to augment the secretion of urine. The excitation produced in the brain by the acid is followed, according to Dr. J. almost immediately, by congestion of that organ, giving rise to a heaviness and tensive pain in the head. The congestion increasing in extent causes a state of numbness and stupor. The affection of the brain influencing the whole of the nervous system, all of the functions, especially those connected with sensibility, suffer in consequence. Thus, the power of the muscles diminishes with their sensibility, and this debility is the more quickly felt in those, the strength of which have been reduced from any cause. As the acid acts with more promptitude and violence upon the cerebro-spinal system than upon the ganglionic, the voluntary muscles feel of course more quickly its influence than the involuntary; life is also always extinguished the latest in those groups of the latter which possess ordinarily the greatest degree of vigour. Hence the left side of the heart preserves its activity longer than the right; and the great arterial trunks circulate the blood for a greater length of time than the veins. This explains the cause of the accumulation of the blood in the veins and right side of the heart, particularly the auricle, as well as the vacuity of the left ventricle and large arterial trunks. In explanation of the appearance of the blood produced by the prussic acid, Dr. Jörg remarks, that when the activity of the nerves of the lungs is considerably diminished, and the lungs are in consequence reduced to a state almost of paralysis, the functions of these organs are but imperfectly performed. The inspirations being feeble, and repeated at considerable intervals, the venous blood sent to the lungs is not sufficiently oxygenated, and it returns to the heart.

but little changed, or it is retained in the lungs, no longer being fitted to circulate through their vessels. Dr. J. conceives that it is doubtless this paralytic state of the lungs which causes most of the uneasiness which those animals experience who are not immediately destroyed by the poison. When the lungs still retain sufficient vigour to enable by degrees the process of oxygenation in the blood to be reëstablished, we may be certain that the animal will recover, as the blood as it becomes more perfectly arterialized, will gradually restore the energy of the nervous system. It is on this account, doubtless, that the phenomena resulting from moderate doses of the acid, are so quickly removed by the action of cool air. Death, therefore, from the action of the hydrocyanic acid, may be caused in two ways. First, by the immediate and total destruction of sensibility; and the second, by paralysis of the nerves of respiration, death resulting from asphyxia. In the two cases dissection will reveal the existence of very different lesions. In the first case the cessation of life is almost instantaneous, and no morbid phenomena are discoverable. In many of the animals poisoned by Dr. J. he was not able to distinguish even the presence of the peculiar odour of the acid in the stomach, a very important fact to the medical jurist. In the second case we recognise a venous appearance of the blood even in the arteries, and as the vessels of the brain and of its membranes are especially surcharged with venous blood, many have believed that this is to be considered the principal cause of death.

As a medicinal agent, so low is the hydrocyanic acid estimated by Dr. J. that he desires to see it expunged from the lists of the *materia medica*, and the laurel water adopted in its stead. The reasons he gives for this, are—the difficulty of preparing properly the acid; the facility with which it becomes decomposed; the uncertainty of its operation—half a drop producing occasionally the most violent effects; and lastly, the difficulty of introducing it into the mouth. If to these we add that the primary effect of the remedy is to produce a powerful excitation of the nervous system, and an irritation of the larynx; and that by its secondary operation it depresses the general sensibility of the system, and causes sleep, stupor, and cough, effects which result in a less marked degree from the laurel water, which at the same time is more easily administered, it becomes evident, according to our author, that the latter is far preferable as a remedial agent to the former.

If employed at all, the hydrocyanic acid is to be restricted as a remedy to those cases solely, in which the use of the laurel water is proper. It may be given in the dose of half a drop every four, six, or

eight hours, mixed with an ounce of distilled water or of milk. The milk should not be added to it but at the moment when it is to be taken. Its use should not be persisted in for any length of time; it is absolutely improper in the cases of children, the activity of whose cerebral system is naturally very great. If by its use we desire to diminish the quickness of the pulse, and render the blood less plastic, in violent cases of phlegmasia of some of the abdominal organs, we should administer the acid, (or the laurel water,) in a maximum dose, and at the shortest intervals; if, on the contrary, we merely propose to modify by it the condition of the nervous system in certain of the neuroses, the smallest doses will be more proper. The hydrocyanic acid of ITNER being stronger than that of VAUQUELIN, should be given only in the dose of from a quarter of a drop to a drop. pp. 97 to 107, and 127.

Valerian.—Numerous experiments were made on the valerian by the members of the society. It was taken in infusion, in the dose of from two to three drachms of the root in four ounces of water, or in powder, in the dose of half a drachm to a drachm of the root, or in the form of tincture, in various doses. In some cases no effects whatever were produced by it; in others it acted upon the brain, and in others again upon the alimentary canal. When the brain was acted upon, a moderate excitement of that organ was first observed, indicated by serenity of mind, gaiety, and a disposition to occupation; to this a slight degree of congestion succeeded, as was shown by a degree of confusion of mind, and by heaviness and pain of the head, but there was never that feeling of prostration and of lassitude of the whole body, somnolency, or profound sleep, preceded by frequent gaping, which is caused by the action of substances which produce a powerful impression upon the brain. When the alimentary canal was the part acted upon by the valerian, eructations, a sense of fulness in the stomach, inappetence, flatulence, cutting pains, tenesmus, frequently discharges from the bowels of consistent stools, and sometimes, when the valerian excited to increased secretion the biliary organ, nausea, and a bitter taste in the mouth. From these effects of the article it is evident that it must give rise to a congestive condition of the alimentary canal and liver, occasioning in every instance a turgescence of the abdomen, and probably a more abundant secretion of urine, with a change in the properties of that fluid. The valerian produces likewise a very slight acceleration of the general circulation, and when taken in the form of a warm infusion acts as a diaphoretic. But this effect of the remedy is very uncertain, and may not depend immediately upon the valerian. Dr. Jürg further remarks

that the action of half a drachm of this substance taken at once continues for about four hours; that of two drachms, twelve hours; that its action upon the digestive organs is most easily induced by the powdered root, and its action upon the brain by the infusion; and finally, that the disagreeable taste of the infusion passes away quickly, while that of the powder remains for several hours. The secondary effects of the valerian, congestion of the head, or of the abdomen, point out the necessity of restricting its use as a remedy to such cases as are entirely exempt from any tendency to a morbid determination of the circulating fluids to either of those cavities, and which at the same time are attended with an actual depression of the vital powers. For individuals affected with hæmorrhoids and stases of blood, the valerian is a remedy altogether improper: although it has very generally been recommended in cases of typhus fever, yet when we reflect upon its tendency to produce an overfulness of the vessels of the brain, it must be evident that there are few diseases in which it may not be employed with greater propriety. It is likewise a very improper remedy in those spasmodic affections which are produced or kept up by an exaltation of sensibility, or by an engorgement of the vessels of the brain or of the organs of assimilation.

Of the valerian, half a drachm is a small dose for an adult; a drachm constitutes a medium dose, and a drachm and a half, or two drachms, a large dose. Accordingly as we desire it to act chiefly upon the abdomen, or the brain, the powder or the infusion is to be employed. Pages 152 to 158.

Serpentaria.—Experiments were performed with the serpentaria, in the form of infusion, in doses of from two to five scruples of the root, in four to eight ounces of water, and also in the form of powder, in doses of from fifteen grains to one scruple. It was found to excite the intestinal canal, producing a determination of blood to all the abdominal viscera, and to occasion flatulence rather than an increased mucous secretion. The phenomena usually following its administration, were eructations, nausea, vomiting, pains and a sense of weight in the stomach, borborygmy, colicky pains of the intestines, frequent expulsion of wind, tenesmus, consistent stools, sometimes increased, and at others diminished appetite, tumefaction of the abdomen, especially at the epigastrium, and itching around the anus. In other instances, it produced a sense of heat, weight and pain in the head, indicating a degree of congestion of the brain; it was found also, sometimes to produce an excitement of the circulation, and in other cases, an increased secretion of urine, due probably to the excitation of the intestinal tube. It may be presumed in the same manner, to excite

also the genital system. The infusion of serpentaria would appear to act, more upon the brain, the powder more upon the abdominal viscera. The effects of this remedy, when administered in small doses, continue during eight or twelve hours; in larger doses during eighteen to twenty hours. On this account it should not be repeated more than twice in the twenty-four hours; a single dose a day is sometimes sufficient. The medium dose for an adult is one drachm of the root, either in powder or infusion.

From the result of his experiments with this remedy, our author concludes that the serpentaria can be useful only in cases attended with a torpid condition of the intestinal canal. As it tends to arrest the mucous and other secretions from the mucous membrane of the bowels, it is principally useful in chronic diarrhœa, unconnected with inflammation. In colliquative diarrhœa also, not attended with phlegmasia, it will be beneficial. On the contrary, it should not be exhibited in those cases, in which the intestinal torpor is connected with congestion, or phlogosis, however slight, of the abdominal viscera, nor when congestion of the brain is to be apprehended. It is improper also during a flatulent condition of the intestines. pp. 179 to 182.

Flowers of the arnica montana.—In the experiments of the society, the flowers of the arnica taken in infusion, in doses of from seven to thirty-six grains, in four ounces of water, were found to produce a very decided irritation of the whole tract of the alimentary canal, but especially of the œsophagus, stomach, and small intestines; the irritation being rather of the muscular tissue than of the blood-vessels; of course, the article chiefly produced increased contractions of the canal, increasing but little the secretions into its cavity. It caused a modification also in the quantity and quality of the urinary secretion. The irritation resulting from the infusion of arnica flowers, extended likewise to the brain, probably through the medium of the nervous plexus of the stomach and intestines, upon which it principally acts; and by its joint operation upon the brain and digestive organs, it produces secondarily an acceleration of the circulation, and an augmentation of the cutaneous exhalation. By inducing in the pharynx and larynx, a species of itching, the arnica flowers excite also a cough in cases in which the trachea and lungs are very irritable. The effects of this article continue for twenty-four or thirty-six hours. In very irritable habits, one to two grains of the flowers infused in a spoonful of water, will be a proper dose; in less irritable habits, three to five grains in half an ounce of water; when the remedy commences to act, the dose should be repeated only once in twenty-four or thirty-six hours.

The flowers of the arnica are improper in all affections of an inflammatory character, or which are attended with either general or local irritation, particularly when the latter is seated in the head or abdomen. When, on the contrary, the viscera of these two cavities, or the whole body, are in a state of debility; when states of the brain or abdomen are to be removed, or parts affected with paralysis to be excited, then the flowers of the arnica may be found useful. They may be prescribed with advantage also, in an inactive condition of the bowels, connected with diminished nervous, or muscular energy, as well as in chronic effusions within the brain. They also afford an excellent means for rousing the powers of the sensitive, locomotive, and circulatory apparatus, when their torpor is dependent upon strictly chronic affections. Externally, an infusion in eight parts of water caused heat and itching of the skin, but no redness; and the flowers applied themselves, produced in eight hours redness without subsequent affection of the cuticle. Hence they are to be viewed as a useful rubefacient of the mildest kind. pp. 207 to 214.

Root of the arnica montana.—The tincture of the root was found to be less efficacious than the infusion, a fact observed by Dr. J. in reference to several other drugs. The tincture may be useful, he thinks, in cases attended with great weakness of the stomach, and atony and torpor of the intestines. Dose from twenty-five to fifty drops, to be repeated every twenty-four or thirty-six hours, provided it does not excite fever. The infusion of the root irritates to a less degree the alimentary canal, than that of the flowers, its action is also slower and milder, and it produces less excitement of the brain, hence our author concludes, that it should be preferred in cases of chronic or colliquative diarrhœa, without inflammation, where the indication is to strengthen the intestinal canal, without increasing its mucous secretion. The doses of the root are the same as those of the flowers. Besides the effects already described, both the flower and root would appear to have a powerful effect in stimulating the absorbents; they may therefore be really useful, as they have been described by many, in removing chronic effusions into the brain, and indurations of various parts of the body. In this respect they have some analogy to calomel, but are much more liable to produce inflammation. In his experiments, Dr. J. has found that of the remedies denominated resolvents, the primary action is invariably an excitation of the alimentary canal. pp. 226 to 230.

Camphor.—Experiments were performed with camphor, taken in the form of powder, in the dose of half a grain, and in that of tincture in doses of from half a grain to four grains. From these experiments

it was found that camphor stimulates directly the brain and alimentary canal, and indirectly the urinary organs, the skin, and the circulatory organs. Its effects upon the brain were very different in the different members who tried it, precisely as in the case of alcoholic liquors, some experiencing much excitement, followed by a profound sleep, while others experienced little or no cerebral disturbance. It increased the heat of the surface in all, and often produced an increased exhalation from the skin; it also increased the quickness and strength of the pulse, modified the secretion of urine in quantity and quality, and was found to excite actively the organs of generation. Dr. Jörg therefore concludes, that camphor is to be proscribed in all acute inflammatory cases; in irritation affecting the urinary organs, and in every condition of the cerebral system, either connected with congestion, or in which congestion is to be feared. It is indicated only in cases of pure debility; and as it does not, like valerian and arnica, produce congestion of the abdominal viscera, it should be employed in preference to the latter, in the treatment of tympanitis and colliquative diarrhœa, unconnected with inflammation. The dose is from half a grain to a grain, or more. The effects of each dose continue for about four to six hours. pp. 265 to 274.

Castor.—In the dose of twenty grains, castor produced in all the members who experimented with it, disagreeable eructations, but no appreciable effect on any of the tissues: in small doses it produced no effect whatever. Dr. Jörg therefore infers, that it may, with propriety, be erased from the list of the materia medica. pp. 283 to 285.

Musk.—The musk was taken by different members of the society, in doses of from two to fifteen grains. It was not found by any means to be so diffusible a stimulant as it is generally considered to be. It nevertheless powerfully excites the alimentary canal and the brain, giving rise to eructations, sense of weight in the stomach, sometimes diminished, and at others increased appetite, and dryness of the throat. Its action on the brain is evinced by a sense of weight in the head, pain and giddiness, followed by yawning, somnolency, sense of depression and weight throughout the body, and finally, deep, prolonged sleep. It large doses it caused tremblings, and even slight convulsions of the limbs. The musk excites also the circulation, causing the pulse to become fuller and more frequent. It does not communicate its peculiar odour, as is generally believed, to the sweat; urine, or feces. As a remedial agent, our author concludes, that musk can be employed only in cases of atony of the brain and nervous system, unattended with congestion; but that it is not a remedy so well adapted, as is generally supposed, to cases of extreme nervous debility.

the excitement which it at first produces being soon followed by a corresponding collapse. The dose is from three to five grains. The effects of each dose continue for eight or twelve hours. pp. 305 to 306.

St. Ignatius' bean.—Experiments were made with this article in the form of tincture and powder. Doses of from half a grain to four grains of the powder, and from nine to ninety drops of the tincture, made of one ounce of the bruised seeds, to eight ounces of alcohol, were taken by different members. It was found to produce ptyalism, nausea, weight and pain of the epigastrium, increase or loss of appetite, eructations, borborygmy, colic, constipation, or purging, and heat or itching around the anus. To these followed a sense of weight in the head, vertigo, dull pains of the occiput, forehead, temples, and eyes, ophthalmia, with increased secretion from the Meibomian glands, and subsequently prostration, somnolency, aversion to labour, and apathy, with, occasionally, acceleration of pulse, and a sense of creeping and heat in the urethra. The remedy therefore in its primary effects, produces an excitement of the alimentary tube, of the glands which appertain to it, and of the brain. These effects disappear, and are renewed several times. Dr. Jörg recommends the article as a remedy in cases of atony of the alimentary canal, accompanied with chronic engorgement of the glands, provided the patient is not of too irritable a habit; in all diseases of a periodic character; in atony of the brain, and in feebleness of vision. The dose to commence with, should be half a grain of the powder once in twenty-four hours, which may be gradually increased. pp. 341 to 345.

Assafœtida.—The assafœtida was taken in doses varying from one to fifteen grains. It was found to produce a very considerable excitement of the alimentary tube, especially the œsophagus, stomach, and small intestines. It stimulates likewise the brain, producing congestion of that organ, indicated by dull pain of the upper part of the head, forehead, and eyes. It excites also the circulation and the organs of respiration. But the secondary effects of the assafœtida are chiefly manifested upon the genito-urinary apparatus. Hence it is a proper remedy in an atonic state of the intestinal canal, or other organs, or indeed of the system generally. Dr. J. doubts, however, the propriety of its use in hysteria and hypochondriasis, as these diseases are, in the majority of cases, accompanied with congestion of the abdominal viscera, and with constipation. It is ordinarily given in too large and too frequently repeated doses; from half a grain to one grain, the doctor found to be in general sufficient, and that the effects of each dose continued until the second or even third day. pp. 381 to 385.

Opium.—The opium was taken by different members in substance, and in tincture made by digesting one part of opium in three parts of rectified alcohol and the same quantity of distilled water. The powder was employed in doses of from a twelfth of a grain to three grains with a few grains of magnesia. The tincture in doses of from one to thirty-six drops, both being taken in a spoonful or two of water. From these experiments the professor concludes that opium is undoubtedly to be ranked among those substances the primary effects of which are to excite every part of the system, and the secondary to determine a state of collapse proportionate to the extent of the previous excitation. Its action is experienced particularly by the brain, hence the lightness of head, extraordinary gaiety, and other phenomena analogous to those of intoxication, followed by heaviness of the head, vertigo, dull pains, inclination to sleep, and finally deep and prolonged somnolency. The excitement produced by the article extends likewise to the whole nervous system. The secondary effects occur so rapidly, especially when the opium is given in large doses, that the period of excitement is often overlooked. After the brain and nerves, the alimentary canal is the part upon which its effects are chiefly exhibited. It occasions here contractions, especially of the stomach and small intestines, a sense of weight in the epigastrium, colic and tenesmus. To these primary effects succeed constipation, flatulent intumescence of the abdomen, with tenesmus unattended with alvine evacuations. In small doses the effects of opium are confined to the sensitive and digestive apparatus, in larger doses it effects secondarily the circulatory organs, the skin and the genito-urinary apparatus, producing in their functions modifications varying in degree and character according to the dose and the idiosyncrasies of individuals.

Dr. Jörg is of opinion that as a remedial agent, opium is adapted to the treatment of a very small number of cases; he had himself employed it but rarely for the ten years preceding the date of the present work. The diseases in which he believes it may be useful, are erethism, distinct from inflammation of the alimentary canal, with increased secretion from the mucous tissue, accompanied with vomiting and diarrhoea; and the morbidly increased secretions from the skin and genito-urinary apparatus. In these cases the primary effects of the remedy do little harm, and its secondary modify beneficially the morbid condition of the affected parts. In administering the opium to adults, the author believes that a twelfth to a quarter of a grain will be the most prudent dose to begin with; where the sensibility is very acute even a less dose will be required. The tincture being less active, a quantity containing one-third of a grain of opium.

will be equivalent to a fourth of a grain in substance. The smallest dose should not be repeated oftener than every six hours; and large doses not oftener than every twenty-four hours or even at longer intervals. When the secondary effects are those chiefly desired the doses should not be repeated too often as the second dose excites anew the stimulant action of the remedy. Opium is best administered in a mucilaginous injection when the crethism of the intestines is confined chiefly to the lower portion of the canal as indicated by continued and painful tenesmus. The proper dose for an injection is half a grain to a grain. Pages 437 to 444.

Digitalis.—By different members this article was taken in doses of from half a grain to three grains of the powdered leaves in a spoonful of water, with or without magnesia. Its primary effects were a powerful and direct excitement of the brain, of the alimentary canal, and of the genito-urinary apparatus, and its secondary a diminution of the activity of the circulation. On the brain, its action was indicated by intoxication, weight in the head, vertigo, dull head-ache, increased heat of the face, and obscuration of vision; on the alimentary canal, by a sense of heat and itching in the pharynx and œsophagus extending sometimes to the larynx and trachea; weight and cutting pains of the stomach and intestines, increased or diminished appetite, expulsion of wind, frequent stools, &c.; on the urinary organs, by a remarkable increase in the secretion of urine, observed in every individual, save one; the urine being sometimes paler, sometimes of a deeper colour than natural; on the genital organs by a remarkable itching in the glans penis, erections, and pollutions in the male, and in the female, by symptoms identical with these which precede the menstrual flux. The consecutive effects of digitalis are a diminished activity of the circulation indicated by the diminished size, force, and frequency of the pulse. The depression of the circulation was always, however, preceded by excitement. From these results Dr. Jürg concludes that the digitalis is very far from being an appropriate remedy in inflammatory affections; hence it is contra-indicated in hooping-cough, in acute hydrocephalus, and in all cases of effusion connected with inflammation of the serous membranes, cases in which it is ordinarily recommended; that it can be beneficially administered only in cases of atony of the urinary organs accompanied with a deficient activity in the digestive tube; or in those in which an inactivity of the genital system is associated with debility of the intestinal canal or of the system generally. He questions altogether the propriety of its employment in the morbid affections of the heart, as

its depressing effects will prove injurious in many and useless in most of them. The dose should be from a quarter of a grain to a grain of the powder, and as soon as its effects are exhibited, the repetition of the dose should be deferred for twelve, twenty-four, or forty-eight hours; its effects often continuing for this space of time. In too great doses the author is inclined to believe that it may induce an inflammation of the urinary organs and a consequent diminution rather than an increase of the secretion of urine. The effects produced by a decoction of digitalis resemble very nearly those of the powdered leaves; those of the tincture and infusion are weaker, hence the necessity of giving these in larger doses. Page 468 to 473.

Tincture of Iodine.—The tincture of iodine employed in the experiments of the society was made by dissolving forty-eight grains of iodine in an ounce of rectified alcohol. It was taken by the members in doses varying from one to ten drops, the latter being equal to one grain in substance. Its absolute effect was found to consist in an excitation of the entire alimentary canal. It seemed to affect the mucous tissue in the manner of the saliva or of pure pancreatic juice, but more actively; producing a saline taste in the mouth, increased flow of saliva, thirst, augmented appetite, sensible movements of the intestines, slight colic, discharge of wind and of feces. The iodine acted also on the brain, as is the case with all substances which considerably excite the actions of the intestines, producing weight and dull pain in different parts of the head; it augments likewise the flow of blood towards the respiratory organs, causing in these a condition approaching to phlogosis or even actual inflammation; the irritation extends to the mucous membrane of the nose, increasing the secretion from its surface. When given in a large dose, the iodine was found to excite in like manner the genito-urinary organs. All the secretions poured into the alimentary canal become increased under the use of the remedy. It is from its thus augmenting the activity of the glandular apparatus that the powers of iodine in removing indurations and intumescence of the glands are derived. Dr. Jörg conceives that iodine may likewise be employed, with the best effects, in diseases of the abdomen connected with atony of the digestive organ, stasis of blood in the vessels, and in scrofulous affections. It promises to be eminently useful likewise in those cases in which the nutritive functions of the system are morbidly performed from a defect of vital energy. Its employment under all circumstances requires, however, the greatest precaution; administered in excess it will be very liable to give rise to inflammation or to a morbid relaxation of the tissues.

From two to eight drops of the tincture in a small quantity of water constitute an ordinary dose, which should not be repeated more frequently than every twenty-four or forty-eight hours.

We have now finished a very imperfect sketch of the highly interesting contents of the first volume of Dr. Jörg's publication; our readers will no doubt be equally anxious with ourselves for the receipt of the succeeding volumes. A similar course of experiments with those now before us, performed in relation to the remaining articles of the *materia medica*, will afford to the future inquirer the most valuable data to direct him in his investigations into the remedial properties of the agents best adapted for the cure of disease.

D. F. C.

XII. *The Principles of Medicine, founded on the Structure and Functions of the Animal Organism.* By SAMUEL JACKSON, M. D. Assistant to the Professor of the Institutes and Practice of Medicine and Clinical Practice in the University of Pennsylvania. Carey & Lea, Philadelphia, 1832. pp. 612. 8vo.

THE present may be truly regarded as an important epoch for medical science. The new and important destinies created for it by the discoveries of BICHAT, have extended their influence into all its ramifications, and the lights of general anatomy, while they have served to extricate us from the mazes of hypothesis, in which we were before involved, are daily unfolding to us new truths, eliciting new discoveries, and opening the way to new investigations. Under its impulses, and aided by its principles, the science of medicine has already become, in a great degree, freed from the paralyzing influence of mysticism, and the bewilderings of hypothesis, and is making rapid advances to the condition of a science of fixed principles. Its votaries are no longer content with the unmeaning jargon of the schools, and instead of seeking for the characters of disease in some unknown essence diffused throughout the organism—in the mischievous operations of some archæus, or in the mysteries of the *vis medicatrix nature*, they have become at length impressed with the important conviction, that an acquaintance with structure, and a careful investigation of its healthy and diseased properties, can alone conduct to correct principles in medicine, and constitute the only legitimate grounds of rational therapeutics. Anatomy, physiology, and pathology, are the main pillars of medical science, and any superstructure

which is not constructed upon them, however highly it may be decorated, will be no more durable than the mere cobweb-ornaments of speculation, and will speedily crumble into ruins before the vanquishing influence of truth and reason. A knowledge of structure and its laws must constitute the starting point of all successful medical inquiries, and so long as we suffer ourselves to be conducted by the lights afforded by that knowledge, we may be sure of not becoming lost in a vortex of visionary speculation; that we are in the only road to truth; and that in the end success will crown our exertions. This it is that constitutes the basis of *physiological medicine*, and these are the principles which it is the object of its votaries to keep constantly in view in all their inquiries. Amongst the great number who have enlisted under this banner, within late years, few have adhered more closely to these rules than the author of the treatise which we now propose to review; with what success will be seen by the issue.

The entire material creation is divided into two parts, which, though to a certain extent influenced by the same agencies, are nevertheless characterized by attributes so dissimilar, and undergo changes so much at variance with each other, that they "stand opposed in almost every characteristic trait." The first of these divisions, which is by far the most extensive, is composed of inorganized or dead matter, merely bound together by a mechanical aggregation of particles, possessing within themselves no power of motion or change, but influenced solely by physical and chemical laws. These particles of matter have no living principle to influence their compositions and decompositions; they give rise to no vital manifestations, and are only endowed with a correlative power of attraction or repulsion, in virtue of which, they mutually attract each other and unite, or are reciprocally repulsed and broken asunder. The second department is composed of objects endowed with higher powers, and susceptible of higher destinies. Living organized matter is its constituent element, and this, though influenced also by the same physical and chemical laws; though its particles are, to a certain extent, obedient to the same play of affinities, it is, besides, endowed with a property whose power and extent of influence are supreme; which presides over and controuls the development of the organic molecules, shapes and determines the whole of the organization, provides for its wants, protects it against the influence of unfriendly agencies, and secures it against decay by transmitting it from generation to generation—"whose generality of action, composes the vital or organic laws, or laws of living matter."

"In both these extensive divisions," says our author, "matter in its ultimate

elements is the same, but differs entirely as to its forms and properties; they are infinitely more numerous in unorganized than in organized matter. The duration of the forms that matter assumes, and the properties it acquires in its inorganized state, is indefinite; they may exist from a few moments to a thousand ages. But in organized matter its forms and properties have a limited existence; a period is allotted to each, beyond which it cannot be continued."

But it may be useful to point out more fully the properties and characteristics of these two grand divisions of the material world, and to contrast them more particularly with each other.

"Inorganized, or brute matter, has no specific characters of individuality,* except in its integrant molecules: the external form which it is capable of assuming, its volume, and its duration have nothing fixed and constant, and have no established or allotted period of existence. In organized matter, on the contrary, the specific characters are always determined by, or founded upon, the order and disposition of the molecules, which are always moulded into determined forms, and which, under these forms, are only allowed a limited and determined period of existence.

Inorganic bodies have their origin merely in a mechanical aggregation or juxtaposition of particles, and their growth is only effected by a gradual accumulation upon their surface. Organized or living bodies, on the contrary, are derived, with a few exceptions, from a preëxisting being of a similar kind, by the separation and progressive development of a germ, or a portion of its substance, previously prepared by the process of fecundation: their growth is internal, or is accomplished by the interstitial deposition of molecules.

The particles of which the one is composed are derived from the dissolution, or the wear and attrition of other bodies. They are united into aggregate masses, without any previous preparation, form no primitive arrangement by which an interior organization is developed, and exhibit nothing regular in their disposition, except what results from the physical and chemical laws which regulate the common attraction of aggregation and the phenomena of crystallization. The particles which enter into the formation of the other are prepared by itself; they are alternately deposited and removed, according to the exigencies of the laws of the living organization; they build up and sustain the vital structures, contribute for a definite period to the growth of the organs, maintain them for a certain time in the condition which constitutes their specific characters of individuality; are modified by all the external agencies which influence the category of vi-

* Lamarck, *Animaux sans Vertebres*, Tom. I. p. 33.

tal phenomena, and only yield themselves up to the exclusive dominion of physical and chemical agencies, or assume the character of inorganic matter, after they have been forsaken by the vital principle which served to animate them.

Inorganized matter being merely influenced by physical and chemical laws—submitted to the processes of composition and decomposition, according as its particles attract or repel each other, is independent of the necessities of the preservation of its individuality, has no specific characters to propagate or transmit, and is hence not limited to any period of duration, or obliged to undergo any regular and specific stadia, or periods of development or decay. Its masses are merely formed and shaped by an aggregation of its molecules, and are broken down or disunited by the wear and attrition of its particles. The beginning as well as the termination of these masses is indeterminate, and is entirely under the controul of fortuitous circumstances. It merely possesses the property of being influenced by laws strictly physical and chemical, is endowed with no faculties, no excitability, and no powers of motility, except what are imparted to it by physical force, by the mutual attraction and repulsion of its particles, and which is in no wise indebted to, or connected with, any principle of life, or vital property.

Organized matter, on the contrary, has for its main object its individual preservation, and its propagation and extension. It derives its origin from a germ, which constituted a portion of a being altogether similar in form and attributes to itself; it forms, according to its necessities, the molecules which are subservient to its own preservation. It does not grow simply by external accretion, or aggregation, but by intussusception, or the interstitial deposition of molecules; its integrant parts are not every where identical, but are heterogeneous, and exhibit different characters in different situations—assume different forms, and are endowed with dissimilar properties. It is composed of solids and fluids, which exercise a correlative influence upon each other; is not merely endowed with properties, but with faculties, in virtue of which it is susceptible of being influenced by external agents, and excited to the performance of certain acts, the assemblage of which constitute what are called the vital phenomena, or life itself. It moves and feels, thinks and wills, is vigorous or feeble in its actions, according to the necessities inseparable from its preservation; passes through regular and determinate stadia of growth and decay, which are regulated by the same necessities; the period of its duration, though to a certain extent dependent upon fortuitous circumstances, is nevertheless controuled by determinate

laws, and it does not come to its end by a mere mechanical wear and attrition of its particles, but by a series of changes dependent upon the nature of its own existence, by which its faculties become gradually impaired and disqualified for the performance of those actions the assemblage of which constitute life or vital phenomena; these finally cease, and it becomes still, motionless, senseless, and dead.

“Solvuntur frigore membra;

Vitaque cum gemitur fugit indignata sub umbras.”

The process of decomposition commences; the characters of organized matter become merged in those which appertain to inorganic or brute masses—its particles are resolved to enter into new forms, and

“Fit quoque, ut in nostrum quom venit denique cælum,
Corrumpat, reddatque sui simile, atque alienum.”

The principle which impresses upon organized matter these distinguishing peculiarities, pervades all its forms, and identifies itself with all its gradations. Its actions are manifested throughout every form and variety of animal existence, from the lowest monad up to man, who presents the most complex and perfect organization in the whole scale of animal beings. It is the essence of the entire assemblage of actions which constitute life; is the source of all living entities, and fulfils all the numerous and varied operations which are called for by the exigencies inseparable from their origin, growth, preservation, and propagation. But what is “this fleeting and evanescent energy which, unseen by the eye, untracked by the understanding, is only known, like its great author, by its effects; but which, like him too, wherever it winds its career, is perpetually diffusing around it life and health, and harmony and happiness?” This question, like the enigma ensculptured upon the Temple of Isis, has never been answered, and will, to the end of time, remain concealed within the impenetrable bosom of divinity: and Dr. Jackson, instead of entering into any useless speculations on the subject, very judiciously observes, that whether the aptitude, which it imparts to the organization to be impressed by stimuli,

“Is a property matter acquires by its organization; or whether it proceeds from an immaterial or imponderable principle, acting through organized matter, is a question of metaphysics foreign to medicine—what we know as certain is, that organization and vitality are inseparable; they cannot exist in an isolated state. Of vitality we can form no conception, but as it is displayed in organized matter; and of organized or living matter, our knowledge is altogether derived from the vital phenomena it displays.”

• Good's Book of Nature.

But matter, endowed with this principle, and possessed of the "capacity or aptitude for vital phenomena," will remain quiescent, unless it be exposed to the influence of stimuli, which is an indispensable condition in their development. The seeds of a plant, though furnished with a germ perfect in its organization, and endowed with this essence of vitality, may be shut up in a box for months without manifesting the slightest indication of vital phenomena; but expose them to heat, moisture, and oxygen, which are their appropriate stimuli, and the infant germ will burst from its solitary incasement, will unfold its delicate foliage, and, nourished and sustained by congenial stimuli, will grow and flourish, and acquire all the characters of individuality, which appertained to the parent from whence it had its origin. The same is true of the eggs of oviparous animals: hence our author concludes, we think justly, with BROWN, "that life is called into activity, and maintained by stimuli, or is the consequence of the operation of stimuli, or excitants, on organized matter."

All the causes which surround us and can be made to act upon our organization, however different in their nature, have the same general modes of action on the organized structures, "either exciting or diminishing the organic actions of the organ or organs receiving their impressions; they are either stimulants or sedatives." These agents, he conceives, have no other appreciable mode of action, and all the recognised physiological and pathological phenomena, as far as our researches can be carried, are explicable upon these acknowledged principles; their modifications and variety being merely dependant upon the difference of the structures concerned, and the degrees of intensity exhibited by the action of the efficient agent itself. When the impressions they occasion are moderate, they are excitors of healthy phenomena; when their intensity surpasses a certain limit, the impressions they excite are no longer consistent with the healthy play of the functions, and they become the causes of abnormal, perverted, or pathological phenomena; the one or the other of these conditions being excited by the same agents, according to their degrees of intensity. Dr. Jackson does not consider that specific modes of action are at all necessary, if they do exist, in explaining the phenomena of the animal economy in a natural condition, or that they can aid us in the adoption of practical means to combat them in a morbid state. In relation to his explanation of the excitation of the phenomena of life, by the action of stimuli upon the organization rendered susceptible by being endowed with the essence of vitality, we accord fully with our author, and believe the proposition to be incontrovertible; but in the conclusion which he has deduced from it relative to

specific modes of action, we think he has adopted a postulate which is far from being compatible with the known phenomena of the healthy and diseased actions. That the element of all organic phenomena is either an impression of stimulation or counter-stimulation we are fully assured, but in the modes of these organic actions there are shades, and varieties, and modifications, and sequences, which cannot be explained upon any other known principle than the acknowledgment of specific actions, either in the tissue itself, or in the acting agents. We may be told that all this may be explained upon the appreciable variety of the structures which are implicated, but what is this but a tacit acknowledgment of the principle we are contending for; for if a structure, which is indebted for its capacity to act under the influence of stimuli to the same vital-essence which also endows another structure with the same capacity to be excited by stimuli, and this structure evinces any peculiar mode of action not exhibited by the other, we maintain that it is capable of specific modes of action, inasmuch as every action peculiar to any structure, or organ, and incompatible with the capabilities of another, must be admitted as a specific action. While, therefore, all organized structures possess, in common, a capability of being impressed by stimuli, each one has its peculiar and specific modes of action, which are indispensable in the performance of its healthy function, and which likewise reveals itself in its diseased phenomena.

The next subject that engages the attention of our author, is the definition and classification of the organized solids, the general healthy and diseased characters of which are succinctly, but clearly stated. The organic elements, consisting principally of gelatin, albumen, and fibrin, variously modified, and arranged into fibres and filaments, constitute the basis of the different tissues and organs. These tissues are computed by Dr. Jackson as follows:—"1. Cellular. 2. Vascular, (arteries, capillaries, veins, and lymphatics.) 3. Serous. 4. Fibrous. 5. Fibro-cartilaginous. 6. Cartilaginous. 7. Osseous. 8. Nervous. 9. Tegumentary. 10. Glandular. 11. Muscular."

It should be stated, however, that he does not conceive this arrangement to be strictly physiological, but merely adopts it because it is conducive to clearness and precision in the examination of pathological phenomena.

It is not our intention to furnish an exposition of the views and opinions of the author upon all of these structures, or to point out their properties, as many of them do not embrace any thing not comprised in the common treatises on general anatomy. Upon a few

points, however, we shall bestow more attention, as the considerations they involve are of a more interesting character.

In reference to the capillary circulation, we meet with some views which, though they have been advanced by several distinguished physiologists, have never been generally adopted. That they should not have received a more general assent is to us surprising, since they are not only clearly established by an examination of the movement of the blood through a diaphanous structure, but seem to us to be indispensable, to enable us to comprehend many physiological and pathological phenomena. In relation to this subject, the following are the sentiments advanced:—

“From the results of microscopical observations, little doubt rests on my mind, that a large proportion of what is regarded as capillary circulation, is not in fact performed by vessels. On the contrary, the blood circulates out of vessels, but in currents which are established in the globules and interstices of which the ultimate structure consists. While examining the circulation in diaphanous tissues, we have the ocular demonstration of this fact. The currents of globules flow in every direction; I have seen currents of globules commence where none existed, and by the application of a mechanical irritant, I have seen the whole tissue become a mass of moving globules, pursuing every course with great diversity in their velocity.” p. 23.

The correctness of these observations are confirmed by the experiments of DUTROCHET on the circulation of the Salamander; and still more by those of SARLANDIERE and BROUSSAIS. But whether this circulation, beyond the pale of the capillary vessels, is effected by a simple percolation of the fluid through a kind of spongy parenchyma interposed between them, as represented by the ancients, and especially by ERASISTRATUS; through lateral pores, as maintained in modern times; or by its traversing the interstices of the rudimentary globules of the tissues, we will not take upon ourselves to decide; but certain it is, that it is by this portion of the circulation “that all the phenomena of nutrition, composition, and those of decomposition,” are developed;* and this view of the subject is rendered still more plausible when we refer to the lower orders of animals, which are endowed with no vessels, and in which the whole process of nutrition is accomplished by imbibition, and the whole circulation by a simple percolation of the nutritive fluids between the homogeneous animal molecules.

But we must leave this subject to pass to the consideration of the nervous system, which, whether we consider the delicacy of its or-

*Broussais's Physiology, p. 351.

ganization, its wide diffusion amongst the various tissues and organs, the varied functions to which it is subservient, its exquisite powers of perception, its extensive participation in both the animal and organic functions; or whether we look upon it as the seat of all our sensations and thoughts, the supreme regulator of all our volitions and our actions, or as the throne of intelligence, it must be admitted to possess a high and commanding claim upon our attention. Its operations blend themselves with all physiological and pathological phenomena, and the manifestations of its powers are developed in every act of the organization.

The nervous system is represented by Dr. Jackson as consisting of two principal divisions:—"1st. The brain, the spinal marrow, and their nerves; and 2d, the great sympathetic, or intercostal nerve, spread along the neck, in the chest, and abdomen."

1. *Cerebro-spinal System.*—This portion of the nervous system constitutes the means by which the external relations of the individual are preserved. It is at once the seat of intelligence, of volition, and of the expressions. The various nervous ramifications and expansions constitute, as it were, the outposts of the system; they receive all impressions, and like faithful sentinels, convey them to the brain, where they excite perceptions, and create volitions. They warn of the dangers which surround us; and return, from the brain to the locomotive apparatus, the power by which we are enabled to resist or escape them. They furnish a convenient avenue by which a never-ceasing tide of pleasures find an inroad to the mind, or through which sickness, pain, and misery, inflict upon our existence their pangs, and their withering influence: they depict the passions, and pourtray the emotions of the soul—whether illumined by joy, or distorted by sorrow and despair: they animate every impulse, regulate every motion, and experience alike every desire and every aversion: they, in fine, by their varied and elevated endowments, place man above all the beings which surround him, and constitute him the lord of creation.

It has been customary, until within a few years, to consider the central portion of the nervous system as an unit; but modern researches and experiments have demonstrated that it should rather be regarded as constituted of several distinct apparatus, which, although somewhat linked together in structure, and united by sympathies, subserve different purposes, and execute different offices. Thus, the brain, as a whole, forms the organ of intelligence and feeling; but how numerous are the characters of which these attributes are composed, and how varied their activity in different individuals, and in

different temperaments? These varieties are always found to correspond with the cerebral development, to be influenced by cerebral activity, and to bear to these the relationship of cause and effect. All men have brains, and if the human mind were a unit, all men should have the same feelings, the same intellect, and the same propensities, only making allowance for difference of activity. Varieties, in these respects, would merely be accidental, and individuals of the most exalted and varied attainments, would be altogether indebted to fortuitous circumstances for their preëminence. This would be a perfect solecism; and until the metaphysicians shall adduce some more powerful arguments in favour of the principles they espouse, we shall be satisfied to adopt the principles of GALL, according to which, the mind is composed of a plurality of faculties, each of which has a distinct locality, or an appropriate organ in the brain. This view of the matter is taken by our author, and we fully concur with him in the declaration, that—

“The seat of these faculties is difficult to assign with precision, but it can be affirmed beyond a doubt, that the nobler and higher faculties are located in the anterior and superior parts of the brain, while the secondary faculties have their residence in the posterior and inferior portions of the encephalic structure.” p. 32.

There are not only different portions of the brain subservient to the performance of the different intellectual operations, but there are different sections of the cerebro-spinal apparatus to excite and regulate all the other functions of relation. This is not a mere gratuitous assumption, but a fact fairly deduced from experiments on the living organism. The experiments of SERRES, FLOURENS, ROLANDO, and others, have determined the portions of the cerebro-spinal apparatus in which many of these functions are located, but as it would take up more space than we can allow, we will merely observe that the functions of sensation, voluntary motion, and respiration, seem to be seated in the medulla oblongata, and the parts in its vicinity. The acts of progression are regulated by the cerebellum, while the faculty of associating the voluntary movements is situated in the tubercula quadrigemini.

The nervous chords are regarded by our author as “intermediate between the nervous *expansions* or *tissues* in the organs, that are the recipients of external impressions, and the cerebro-spinal organs to which they transmit those impressions.” These nerves perform different offices, some of them being subservient to voluntary motion, some to sensation, while some merely preside over the acts of innervation, or the various organic actions and functions.

The periphery of the nervous system of relation is considered by Dr. Jackson to consist of "nervous expansions," or tissues, existing in, and entering into the composition of the organs; and these he conceives may exist independently of the brain and nerves. Exemplifications of these expansions are furnished by the retina, the papillary expansions of the lingual branch of the trigeminus, the auditory nerve, and in the nerves which are distributed to the cutaneous papillæ. But if it is the intention of Dr. Jackson to assume these expansions as a constant character of all the peripheric nervous terminations, we do not think the inference warranted by observation, though we are aware that the affirmation has been before made by many distinguished anatomists, especially by REIL, PROCHASKA, and CARLISLE. RUDOLPHI* denies that the nerves terminate in this manner in the tissues, or by free extremities, as represented by Reil, but affirms that they branch out, and become inflected upon themselves, so as to form a delicate plexus, composed of numerous minute loops. This also accords with the observations of PROVOST and DUMAS.†

But as far as function is concerned, this does not seem to be a matter of much consequence: for whether the periphery of the nervous system consists of expansions, as represented, or of the kind of termination described by Rudolphi, it is evident that different portions of it are endowed with different susceptibilities, which enable them to execute actions appropriate to the functions they have to perform. This Dr. Jackson ascribes to a mere difference of structure, but in many cases such differences are not appreciable, and we should rather be inclined to refer it in part to a difference of vital endowment, in virtue of which each portion possesses an aptitude to produce peculiar and constant results under the influence of its appropriate stimuli, and this we would allege as an argument in favour of the organization being endowed with specific powers, or modes of action.

The cerebro-spinal nerves are not the only portion of the nervous system which transmit their impressions to the encephalon. In consequence of the close connexion between it and the ganglionic nerves, it likewise receives the impressions developed in the apparatus of the organic functions, which, however, are frequently so obscure, in the healthy state, as not to occasion any consciousness, but which, in disease, play an important role in the propagation of many pathological phenomena.

* Grundriss der Physiologie. Band. I. p. 95.

† Magendie's Journ. Tome III.

2. Ganglionic System.—This important division of the nervous system differs as much from the cerebro-spinal in its organization, as in the functions it performs. It presides over the whole of the internal, or organic functions, while the other maintains and regulates the external, or animal functions: the one controuls the apparatus by which the individual is preserved, and the species propagated, while the other constitutes the medium by which he holds converse with the world around him. Both, however, are so closely linked together, that the influence of the one is readily extended to the other. The following inferences are deduced by our author, from considerations based on anatomical structure, relative to the functions of the ganglionic system:—

“*a.* It is not independent of the cerebro-spinal nervous system, but derives its nervous activity from its connexion with that system. *b.* It is connected throughout its whole extent by the numerous nervous filaments, passing from one ganglion to another, and uniting the different plexuses. *c.* The organs of the head, neck, thorax, and abdomen, with the genital organs, which receive nervous filaments from this system, are placed in communion of actions and impressions, which are transmitted from one to the other, and it is thus the principal instrument of the sympathies between those organs. *d.* Supplying the thoracic and abdominal viscera, and genital organs, with nerves, and communicating with the cerebro-spinal nervous system, it is the medium of communication between these organs and the nervous system of relation. *e.* Supplying the abdominal and thoracic viscera, and genital organs, with numerous nerves, this system must be the chief agent in maintaining the exercise of their functions. *f.* From the quantity of nerves it distributes to the arteries, the closeness with which their vessels are invested with those nervous filaments, and which are lost in their coats, it must exercise an active agency over the circulation, and in this manner influence the secretions and nutrition. *g.* The muscles that receive nervous filaments from this system, have this peculiarity, that they act without volition, or even consciousness. They must consequently receive the nervous stimulation for this purpose from the ganglionic system.”

p. 37.

An interrogation of physiological and pathological phenomena will furnish numerous exemplifications of these laws. Many of the organs, the actions of which are regulated by this system, are composed of muscular fibres, and require, in the exercise of their functions, muscular contraction. This contraction is, therefore, excited by the ganglionic nerves, which, having only a remote connexion with the great cerebro-spinal centre, merely act in obedience to the commands of the organic instincts, while they have the integrity of their powers preserved by their connexion with the brain and spinal marrow. The nature of the functions which they regulate, moreover, exact an arrangement of the kind in question; for those actions which are stimu-

lated by the will are generally irregular, interrupted, oftentimes wild and tumultuous; do not maintain that character of stability and permanency required by the organic functions, and would, if extended directly to the apparatus by which these functions are performed, often give rise to alarming and destructive consequences.

"Every attack of convulsions would prove fatal by the spasm that would be induced in the heart. In the moments of enſui, of depression and despair, to which the mind is subject when suffering under moral afflictions and calamities, self-destruction would have been the constant refuge of the wretched against the evils attached to our existence, had the action of the heart been subjected to the controul of the will, which could thus suspend its function, and occasion instant death." p. 38.

This is also the case with the function of respiration, which is so closely connected with life itself, that, like the action of the heart, it cannot be suspended even for a few minutes without occasioning death; and as the voluntary motions are all quiescent during sleep, are annihilated in a fit of apoplexy, are deranged and perverted in a thousand ways, by the formidable accidents to which we are constantly exposed; were the functions of circulation and respiration dependent upon the acts of volition, even the indulgence of sleep would bring with it a final extinction of our being. The muscles of respiration are, however, so far under the controul of the will, that they are submitted to occasional interrupted acts of the volition, as in speaking, singing, &c. But as the organic functions are regulated by the ganglionic nerves—

"It appears that a part of the functions of this system, is to place at the command of the viscera, and the muscles it supplies with nerves, a stock of nervous power that is independent of volition, and exempted from the numerous sources of derangement that constantly occur in the nervous system of relation, or animal life." p. 39.

The ganglionic nerves are, indeed, the principal instruments of the instincts of organic life; for as they are extensively distributed to the lining membranes of all the organs by which the life of the individual is preserved, they experience the wants of the viscera, which are the proper organic instincts, and convey them to the cerebro-spinal apparatus, through the medium of their numerous connexions with that system; and this in its turn excites volitions, by which the instinct of respiration, the calls of hunger, of thirst, of urination, defecation, copulation, &c. &c. are immediately provided for, and means are secured for the maintenance of our existence. These instincts vary, however, in their intensity: circulation, and respiration, we have seen, cannot be suspended for more than a few moments,

without occasioning death: the calls of hunger and thirst may be endured for a time, but after a while become so overwhelming as to be irresistible: the same is true of urination, defecation, and all the functions by which life is maintained: but the wants of copulation, being merely subservient to the propagation of the species, though oftentimes urgent, may be controlled, without endangering the well-being of the individual. •

The sympathetic relations maintained by the ganglionic nerves, between the different apparatus which appertain to the system of organic life, and between them and the nervous system of animal life, are particularly important, as enabling us to comprehend most pathological phenomena, and also as constituting the proper source of many of the most prominent characters of disease. These nerves are intimately connected with the cerebro-spinal apparatus, not only by the free anastomosis between the solar plexus and the pneumogastric, but also through the union of the whole extent of the thoracic and abdominal portion of the sympathetic with the intercostal nerves. Other connexions exist at different points, as for instance, in the head, the eye, and the back, in the organs of generation, in the nerves of the ganglionic system which are expanded upon the arteries, which penetrate the bones, and even extend their branches into the intimate molecules of our tissues. As, therefore, the ganglionic nerves are extensively distributed upon all the internal surfaces of relation, and more sparingly upon the external, any irritation applied to those surfaces is rapidly communicated to the different organs, which soon become implicated in the irregular or perverted actions which are thus developed. The stomach and duodenum being most richly endowed with these nerves, they thus constitute, as it were, a centre of sympathies, and any action excited in them irradiates in every direction, involving the organs more or less readily, according to the intimacy of their sympathetic relations. The heart, especially, is peculiarly prone to participate in any disturbance of this kind: its contractions become increased, the course of the blood becomes accelerated, the process of calorification is exalted, the respiratory apparatus also becomes disturbed and is rendered frequent and laborious; the brain is often involved in the irritation, giving rise to cephalitis, or arachnitis, apoplexy, epilepsy, hysteria, and even mania and hypochondriasis. The glandular apparatus may also share in the same surexcitation; they may have their substance inflamed, their secretions increased or diminished, and their whole functions disturbed and perverted; and in the members the same cause may give rise to muscular and articular pains, cramps, irregular contractions, and •

even tetanus. All this may arise too from a simple irritation commencing in the stomach and intestines. But it must not be inferred that an irritation commencing in another organ will not produce the same results: the course we have pointed out is the most usual, yet an irritation commencing in any other apparatus may have its influence extended directly to one or more of the organs or systems which have been enumerated, or be reflected into them by the cerebro-spinal nerves, and produce results altogether similar.

“The heart, more than any other organ,” observes Dr. Jackson, “experiences the agencies of the stomach. The irritations of the mucous membrane of the stomach, with few exceptions, are extended to the heart: its action becomes quickened, and febrile symptoms are induced. The same results may occur from the irritations of any of the other viscera, but it is less common with them than with the stomach; and in reality it will be most generally observed that when fever attends on the inflammations of other organs, the stomach has partaken of the morbid irritation. The general occurrence of these facts, at one time, induced M. Broussais to entertain the opinion and inculcate the doctrine, that irritation of the gastro-intestinal mucous tissue, was a necessary prelude to the establishment of fever, without which it was never manifested. This absolute generalization of facts, perfectly excusable from the frequency with which they are observed, was too hastily made; and in the manly and frank spirit of a true philosopher, has been amended upon mature observation and reflection.” p. 41.

We have quoted this paragraph, not only with a view of illustrating our remarks, but also to correct an error which has been currently circulated in reference to the principles of M. Broussais, and those advocated by the individuals who have espoused the principles of physiological medicine. The *ontologists* have sought refuge under the misrepresentation thus busily circulated, and have availed themselves freely of the opportunity presented by this too hasty generalization of M. Broussais, to detract from the merit of principles which they found too solidly fixed upon the bases of induction to be assailed upon many other points.

But while the whole of the organs are linked together by means of the nervous system, in a chain of the most intimate sympathies, one organ may have its actions deranged while all the others continue to perform their functions in a healthful manner. One may be submitted to an inordinate degree of excitement, while another has its actions proportionally diminished, and it is by no means unusual to find a diseased process going forward in some one of the tissues or organs of sufficient intensity to occasion disorganization, while the others maintain the integrity of their functions, and take no participation in the disturbance.

The observations of our author on the tegumentary, glandular, and muscular tissues are highly interesting, but we shall be obliged to pass them over, and the next chapter, which is devoted to the consideration of the physiological and pathological state of the fluids, we regret cannot receive from us more attention. These subjects are handled with much ability, and the whole chapter abounds with reflections of an interesting nature.

Organic force, or irritability.—We have hitherto been engaged with the consideration of the properties or qualities of the living organism, the different modifications it presents, and the relations its different parts bear to each other. We must next take a cursory view of its forces, or the powers by which it receives its aptitude to be influenced by the agents which act upon it, and to manifest the various conditions called vital phenomena, the assemblage of which constitute what is properly called life. We allude to certain powers or forces, which superadded to the organism, imparts to it certain capacities or aptitudes, which form an indispensable condition of all organic actions, are necessary participants in all vital phenomena, and without which the parent germ could not grow, and be shaped into the regular and determinate forms which characterize a perfect being—could not appropriate to itself the nourishment necessary for its subsistence; could not maintain its relations with the world of pleasures around it, become a creature of reason and instincts, of volitions, desires, and aversions, or, in fine, be capable of communicating the essence of its individuality to be unfolded and developed into a being possessing physical and moral attributes similar to its own.

“The actions of living beings are not self-existing, or have a positive independence; they are effects. They depend on two circumstances or causes for their production. 1st. Organized matter, organs endowed with a force or aptitude to experience the impressions of exterior agents or influences. 2d. The actual impression of these exterior agents or influences.” “Without organized matter and organs, there can be no manifestation of vitality; there can exist no vital phenomena. Without exterior influences, organized matter and the organs remain quiescent; they possess no positive activity; they cannot enter into action; no vital phenomena can be called into existence. The absence of either is fatal to vital activity; vital actions cease when either is withdrawn; they cannot commence or continue without the concurrent aid of both.” p. 98.

The force or power from which organized matter receives these aptitudes, has been variously designated by different writers, and sentiments of the most discordant nature have been entertained with regard to its nature or characters. No correct view of the subject had been taken when Glisson first taught that all the organs are endowed with a property or force, which is an indispensable condition of all.

their movements and actions, and without which the functions would cease or could-not be performed. To this force he applied the appellation of *irritability*, which is still employed to designate the power in question, but was hence very differently applied by different physiologists. The author just quoted divided irritability into natural, sensitive, and cerebral; the first manifested by direct irritation, the second by impressions made on the senses, and the third originating in the brain. The Glissonian doctrine was adopted by De Gorter, and subsequently extended by Haller, who restricted it to the phenomena of motion, or rather, in distinguishing it from sensibility, with which it had been before confounded, he made sensible contractions its proper test, and, therefore, restricted it very incorrectly to muscular fibre. Sensibility was also supposed to be a vital property, but, as our author correctly remarks, "sensibility is a function, the office of a particular apparatus of nervous organs, and not a vital property." It is by confounding the principles of irritability, which is a fundamental condition, with functions which are merely secondary phenomena, that most of the errors have originated which have been taught upon this subject. This observation not only applies to the doctrine of Haller, but also to that of Brown, who, in employing the term excitability, confounded irritability and sensibility, as the expression, in the acceptance in which he employs it, embraces both these principles. It should, on the contrary, be regarded "as an ultimate fact of the organization. It belongs to all organized matter whatever its form, state, or condition. It is inseparable from organization, and is the first element or essentiality in every act or phenomena of life. It is then a vital property, possessed by every organized being, enjoyed by every portion of the living animal and vegetable structure." But we are here met by a question of some moment, and to which it may be difficult to furnish a solution; what is the origin of the vital property? Is it a transmission with the rudimentary germ, from the parents to the offspring? Or is it acquired by the development of the organism? Does it increase with the evolution of its different parts, attain its full activity only when they have reached the acme of their formation, and decline in proportion as they become worn out, and evince a tendency to return to the condition of the elementary molecules by which they were built up and sustained? The first of these doctrines appears to us untenable; whether we adopt the philosophy of the spiritualists or the solidists, it is alike irreconcilable with the laws of strict induction.

"The germ does not possess the organs of the fœtus, or the fœtus those of the adult. How vast is the disproportion between the incipient germ and lordly

man, the ponderous elephant, the unwieldy leviathan of the deep, and the gigantic oak, the monarch of the forest, which proceed from it. Can it be supposed that the organic force, which imparts to the organs their capacity for action exists before the organs are formed, or that in the *punctum saliens* is included the power that is destined to bestow the active energies, and maintain the phenomena of the immense mass of matter that composes its perfected and developed type? These are suppositions that would be wholly gratuitous, without fact or analogy in their support." p. 100.

This organic force must, therefore, be derived from the nutritive actions, and to insure its development it is only necessary to bring the germ, already quickened by the act of fecundation, in relation with its appropriate stimuli; it appropriates exterior matter to its wants, its rudimentary parts become by degrees unfolded, its irritability multiplies in the same ratio with the development of the organization, is most active when the latter has attained its full and perfect development, and declines as it becomes altered and disintegrated by age.

Præerea gigni pariter cum corpore, et una
Crescere sentimus.—*Lucret.*

Adopting this view of the subject, we shall, without stopping to enter into any metaphysical disquisitions, proceed to lay down the principal laws of irritability, as deduced by Dr. Jackson from an observance of its phenomena.

"*First law.*—Irritability is a common property of all organized matter, and is a first result of the vital chemistry or affinity by which matter is brought into and maintained in an organized state. It is a property of the solids alone."

"*Second law.*—Irritability, though a common property of organized matter, yet being a result of organization, is modified by every difference of organization.

"*Third law.*—Irritability has its source in the system. It is constantly fluctuating, being greater or less in degree, either in the whole organism or in certain organs. It is dependent for its production on the activity of irritation, the quantity and state of the fluids, and the facility of their circulation.

"*Fourth law.*—The quantity of the fluid influences the production of irritability. It is always most active in the most vascular structures, and it never increases in a part without a corresponding increase of fluids in that part. Whenever the irritability is diminished, the fluids are uniformly in less quantity, wherever that diminution has occurred, and if the supply of the fluids be cut off, as in the operation for aneurism, the irritability, as well as sensibility, is reduced to the lowest ebb, and returns only as the circulation is restored.

"*Fifth law.*—In the exercise of irritability the state of the fluids has manifestly a marked influence. Black blood passing into one organ soon determines a suspension of its irritability, and consequently of its vitality. It acts in this manner on the brain, the heart, and other organs, when respiration is interrupted.

"Sixth law.—The facility of the circulation of the fluids is connected with the manifestation of irritability.

"Seventh law.—Irritability does not exist in an equal degree in all tissues and organs; and, consequently, they differ widely as to their susceptibility of receiving impressions.

"Eighth law.—The irritability being increased in one, two, or three, (it very rarely is in four,) organs or tissues, it is correspondingly diminished in all the other organs and tissues. The phenomena of disease constantly illustrate this law.

"Ninth law.—Within certain limits, irritability increases with excitement, or in proportion to the action of stimuli. It always diminishes by the abstraction of stimuli in the part whose organizations are *indirectly debilitated.*" p. 111, 113.

Functions.—The acts of the organization thus constituted and endowed, manifest certain phenomena which are called functions. These are necessary in the preservation of the individual, and in the propagation of the species. "Life is indeed maintained by the functions; they are, as Richerand expresses it, the means of existence; and every disorder of function, is an aggression on the province of life." p. 124.

The functions have been very differently enumerated by physiologists; but the following exposition of them by Dr. Jackson may be considered as embracing all the acts of the organization, which are properly entitled to that appellation:—

"1. Digestion. 2. Absorption. 3. Respiration. 4. Circulation. 5. Assimilation, or nutritions proper. 6. Calorification. 7. Secretions. 8. Innervation. 9. Sensibility, or sensations. 10. Intellectual and pathetic faculties. 11. Locomotion, or voluntary movements. 12. Expressions. 13. Generation."

These have been very appropriately divided into two classes; 1st, those which subserve the preservation of the life of the individual; 2d, those which are instrumental in the preservation of the species. The first class includes two orders of functions: 1, those of nutrition, as digestion, absorption, respiration, circulation, assimilation, secretions, calorification, innervation; 2, those of relation, as sensibility or sensations, the intellectual and pathetic or moral faculties, locomotion, and the expressions. The function which is subservient to the preservation of the species, is generation.

This enumeration, though not free from objections, is perhaps liable to as few as any other which has been proposed. Our author has assigned, as the essential characters of a function, two conditions: "1, that it performs a particular office in the economy; 2, that it has an organ, or an apparatus of organs, destined to its accomplishment." Now if this view be admitted, we cannot urge any very forcible objection to the specifications made, unless it be that

in some of the functions enumerated, the same apparatus is made to subserve different purposes, as for instance the nerves, that of sensation and innervation, and the respiratory, assimilative, and secretory apparatus, the functions which appertain to them properly, and also that of calorification.

The functions of relation display themselves in man in their greatest degree of perfection. They bring him, in common with animals, in relation with the universe which he inhabits; render him alive to its pleasures and its pains, and excite in him desires or aversions, according to the exigencies which provide for his support, his safety, and his enjoyments. But upon him alone do they impress the more ennobling characters of an intellectual and moral being, by which he is exalted far above all things of earth, and is alone, of all creation, rendered sensible of the existence and attributes of a Supreme Being, to whom he owes all things, and is responsible for all actions.

The apparatus by which he is enabled to exercise these important functions are, "the encephalon or brain, the medulla spinalis, the cerebro-spinal nerves, the nervous tissue or expansions in the organs, and the great sympathetic or ganglionic system."

These, as is very properly observed by the author, should be considered as a group of apparatus, differently organized at different points and having different actions appropriated to dissimilar functions. The gray and medullary structure, even, of which they are composed, perform different offices, and are varied in their relative positions to suit this purpose. In the cerebrum is placed the capacity or power of manifesting the intellectual and moral operations; the cerebellum probably regulates and coördinates the voluntary movements, while the medulla oblongata, including the tubercula quadrigemini, is the organ of the sensations, and the exciter of voluntary motions and the expressions, as well as respiration.

With regard to the relationship between the gray and medullary substance, Dr. Jackson does not agree with Gall, that the office of the former is to serve as a matrix or generator of the latter.

"The relation pointed out between these two substances does not consist in a mere provision of gray substance that medullary substance may grow from it, but that different functions are to be performed, and, consequently, that a different structure is to be provided." *p.* 127.

In this sentiment we are disposed to concur; at least the hypothesis of Gall has never been satisfactorily established, and, as has been observed by Tiedemann, is incompatible with the order of the development of the organ. In addition to this, if the one were the

matrix of the other, there should be a constant relationship between them, which an appeal to comparative anatomy will convince us is not the case. Thus, as has been justly observed by Treviranus,* if we compare the brain of a bird with that of man, we shall find in the first a large quantity of gray substance, in proportion to the quantity of medullary matter; while in the latter the medullary matter greatly preponderates. But be this as it may, the two substances do not possess the same vital properties; for the gray substance of the convolutions may be sliced away, in a living animal, without occasioning either pain, convulsions, or destruction of the powers of sensation or motion; but if the medullary portion be only slightly injured, the one or the other of these results constantly ensues, according to the part affected.

The medullary fibres are considered by Dr. Jackson to perform the office of conductors of the impressions or stimulations; while the gray substance, he thinks, composes the nervous organs which are engaged in "executing, manifesting, or originating the nervous functions, and displaying nervous phenomena."

The first part of the proposition, as far as it goes, is indisputable, but the latter is a mere assumption unsupported by positive testimony, and scarcely reconcilable with the structure of some portions of the nervous system, especially with the origin of some of the nerves; for, notwithstanding the affirmation of Gall, that they all proceed from the gray substance, the most careful researches have not yet been able to establish the truth of the declaration. Indeed, admitting it to be well-founded, the quantity of the gray matter in some portions of the nervous system, and especially as connected with the origin of some of the nerves, is too insignificant to perform the important offices assigned to it, and the medullary fibres vastly too great in number merely to serve as instruments of transmission.

"The sensations," says Dr. Jackson, "are the perception by the intellect or soul of impressions or movements in the organs." Thus, when an impression is made upon any of the surfaces of relation, it is not perceived by the nerve which receives it, but is transmitted by it to the brain, where it excites perception and awakens volition. The nerve, therefore, under these circumstances, performs a double office; it acts as a recipient of the impression, and as a conductor by which it is transmitted to the sensorium. It is by the nerve, also, that the volition is conveyed to the particular muscles which are to be called into action. The truth of this proposition is easily demon-

* Biologie, Band 5. p. 322.

strated. If the nerve be divided or included in a ligature, the impression is not perceived; and the same effect takes place when the brain, from disease, is incapable of exercising its functions in a proper manner. Yet there are perceptions which take place independently of immediate external impressions, and which originate in the brain itself, as for example, those which are excited in dreams, delirium, &c.

The sensations have been divided into general and specific, the first consisting of the common feelings developed by the nervous system in general, (*sensatio aesthesis*,) the second those which are developed by special apparatus, and excited by special impressions, as touch, smell, taste, hearing, and sight. This division is well founded in nature, and should be observed in enumerating the phenomena of the functions of sensation.

It has been already stated that sensation should be considered as a function, and not as a vital property, as has been represented by several authors. It must not, therefore, be confounded with irritability or excitability, as has been done by some physiologists. The one is a property appertaining exclusively to the nerves, and is enfeebled or annihilated by any disease or injury implicating their structure. The other is a property of the entire organization, and is an element in all vital phenomena. But although sensation is a property which belongs to the whole nervous apparatus, it is greatly modified in different parts of it; in some merely manifesting itself in form of general sensations or feelings, as of heat, of cold, of pleasure or pain, titillation, itching, &c. while the other exhibits special characters, as in the sensation of sight, smell, &c. and can only be excited by peculiar stimulus, as light, odoriferous matters, &c. The encephalon does not always evince the same aptitude to receive the impressions conveyed to it by the nerves. The readiness with which it perceives them being not only influenced by different states of health and disease, by the different degrees of intensity presented by the impressions themselves, but also by its various states of action or repose; an active state of abstraction frequently rendering it insensible of impressions of even considerable intensity. When the energies of the brain become exhausted from long-continued or active employment, or from disease or injury, perception frequently does not take place, although the nerves may be exposed to strong impressions. It is in virtue of this law, that pain is extinguished by narcotics, and that an intense irritation may exist in some parts of the organization, without there being any absolute perception of pain. If, moreover, the nervous organism be simultaneously ex-

posed to two impressions of unequal force, the perception of the more intense is only manifested. Thus, observes our author, "persons labouring under acute gastritis, or other intense internal inflammations, become insensible to tickling, though extremely sensitive to it in health."

The sensations seem to have a close relation with the circulation, increase of one being attended with an augmented flow of blood to the part; they are enfeebled and exhausted by intense application, but are rendered more exquisite by moderate exercise, and are on the other hand blunted by long-continued repose. From excessive employment they may, moreover become extinct, or acquire abnormal characters. The abolition or loss of one sense is compensated for by an increase of activity in some other; and the activity of sensation in general is in an inverse ratio with that of voluntary motion. Females and children are endowed with the most exquisite sensibility. Every sensation is attended with pleasure or pain, desire or aversion, and the one or the other of these feelings is developed, according to the intensity of the impression.

"Pleasurable sensation is a moderate and regular exercise or excitation of sensibility, by an object adapted to the organ of sense on which its impression is made." "Painful sensations are caused by an excessive or irregular action of sensibility, or its too great excitement by objects having relations to the organs of the senses, but acting with too much energy; or by objects that have no relation to the functions of the organs of the senses, and are detrimental to their functional acts by irritating them unnaturally."

Pleasure and pain are, therefore, merely relative conditions, and pass into each other, are excited by the same kind of impressions, only differing in degree, the commencement of pain being the termination of pleasure. Thus, "gentle titillation is a sensation that might merit, far beyond scratching, the appellation of a 'royal pleasure,' yet when pushed to excess in tickling, not only is it painful, but may even excite convulsions. Pain is the morbid state of pleasure." p. 141.

The perception of all impressions is attended with cerebral excitement proportionate to their intensity, and when this excitement is immoderate, it not only constitutes disease in the brain, but is also reflected into the whole of the organism, and may give rise to a morbid condition in one or more of the organs. Impressions are thus diffused throughout the system by sympathy, and occasion a concatenation of pleasurable or painful sensations, according to their force.

The next subject of consideration with our author is the sensation of touch. It will be unnecessary to follow him closely in his obser-

uations upon this subject, as he only gives it a very cursory consideration. He has, however, corrected an opinion advanced by Broussais, "that the sensations are not judged by the centre of perception alone, and *à priori*; but after this latter has reflected them to the sensible parts of the system, and particularly to the viscera."* The participation or rather the modification of tactile sensations by the viscera, Dr. Jackson conceives may be more readily explained upon the supposition, "that the morbid irritations of the latter are conveyed to the brain, which being sympathetically disordered, the mode of sensibility is changed; it can no longer respond in a natural manner to healthy and natural impressions, and the perversion and vitiation of the sensations result from the unnatural position of the central organs of the sensations, the integrity of which is essential to natural and regular phenomena." p. 145.

According to the hypothesis of Broussais, even the specific sensations, as those of smell, taste, sight, hearing, &c. could only be manifested after the impressions by which they are excited have been submitted to the circuitous process of being reflected to the epigastric centre, and from thence back upon the brain. The impressions occasioned by the rays of light, by odours of various kinds, sounds, sapid bodies, &c. would thus have to undergo this double process of reflection, before they could be perceived in their proper characters by the brain, or, in other words, excite their appropriate sensations; a conclusion which can scarcely be reconciled with the phenomena of their functions.

We shall pass over the observations of the author on the sense of smell and taste, which, though judicious, do not present any thing to claim our particular attention; and in relation to the sensation of hearing, we shall only quote the following facts, to show the influence it is capable of exercising over the "moral and pathetic faculties."

"I once witnessed," observes Dr. Jackson, "in a patient in the Pennsylvania Hospital, subject to paroxysms of mania, and who had been a military officer, a violent attack brought on while walking calmly in the yard, by the sound of a trumpet, which was blown as a troop of horse was passing. He seized a stick, addressed a tree as Napoleon, and commenced a furious assault."

"Plaintive and melodious sounds are tranquillizing, and often allay nervous irritation. I attended a gentleman from Virginia, who was an amateur of music, and a very fine performer on the flute, in an attack of pneumonia. Being absent from home, he became very much depressed in spirits during his convalescence, and his nervous system was exceedingly irritable, particularly in the

* Physiology, p. 47.

night, when he was restless, and could not sleep. I became apprehensive of nostalgia. While in this state, some pleasing melodies were accidentally performed under his window on a hand-organ, with which he was much delighted. His mind was immediately composed, and he engaged the man to continue his performance; he obtained a quiet night with comfortable sleep. He repeated the experiment with a similar result, and soon recovered." p. 154.

But we must now pass with our author from the investigation of the functions of the senses, to the examination of higher powers—the consideration of the intellectual and moral faculties, by which man is distinguished from all the inhabitants of earth, and ennobled and exalted to that state of preëminence in the scale of existence which has been awarded to him alone by the wisdom of his Creator. To the brute is granted no higher destinies than to be the mere creature of gross instincts; and the main spirit of all its actions acknowledges no higher object than the mere gratification of instinctive or corporeal wants. These gratified, its existence is for the most part restricted to the operations of vegetative life, until again roused by the calls of hunger, or stimulated to the defence of its safety. It is a stranger to all rational endowments, is insensible to the refined impulses of all rational pleasures, and its relations with the world around it, are but slightly elevated above those of the mere vegetable creation. True, it feels, and wills, and has a locomotive apparatus, but these attributes have no higher object than the mere gratification of the instinctive wants, which are inseparable from its existence; involve no higher responsibility than its immediate salvation; do not extend beyond the influence of the instincts by which they are prompted; are not animated by any intellectual power which looks for a renovated existence in another world; and know nothing of the refined attributes which characterize an intellectual and moral being. These high powers belong to man alone, and the Almighty Creator, in his infinite wisdom, has bestowed on no other being those high intellectual and moral attributes which renders him a responsible agent; which fires him with the desire of a knowledge of all that is in heaven and earth, and soothes him with the confidence of an extension of his intelligence, and an acquisition of an existence and of pleasures that can never die, in the world to come.

These high distinctive characteristics consist of two orders of faculties—

“The intellectual and affective or moral; or those of mind, and as they are commonly called, those of the heart. By the first of these, or the intellectual faculties, ideas are formed, knowledge is acquired and perfected, and man is endowed with the character of rationality; by the last, or affective faculties, he

is invested with passions, the springs and impulses of his moral acts, and which, under the discipline of a well-ordered intellect, or the regular controul of the organs, elevate him to the sublimity of virtue, or degrade him to the baseness of brutal nature." p. 178.

But while these principles are acknowledged, we are met with a difficulty, in the progress of our investigation of the powers they involve, which the ingenuity of man has never been able to surmount, and the solution of which is entirely beyond the humble and limited sphere of his comprehension. What is mind? Is it an immortal spirit, or essence, which exists from time to eternity, pervades all space, animates all matter, and which is at the same time independent of all corporeal forms? or shall we be obliged to regard it in the more humble and perishable aspect of a mere appanage of organization? At this latter conclusion the mind revolts; and before it all our high-wrought hopes of a future and better state of existence, would be withered. It is inconsistent with the attributes of the Deity, and the principles of revealed religion, and cannot be sustained by any process of reasoning. Neither can the former hypothesis be reconciled with what is known of the manifestations of mind. Adopting, therefore, the sentiment of the refined SENECA, that it is one of the mysteries which, *reducta et in interiore sacrario clausa sunt*, we shall leave the question where we found it, and content ourselves with observing what is incontestible; that mind can only be manifested through matter, and that the brain is the organ by which all its phenomena are displayed. What the nature of the powers may be, which endow this portion of the organism with such important faculties, is foreign to the objects of the physiologist, to whom it is sufficient to attend to the manifestations of mind, and the general phenomena exhibited by the intellectual and moral faculties. The essence of mind itself must always remain, as it has ever been, one of the *res ardua et inextricata*, and any inquiries directed, with a view to determine a question so far beyond the powers of human comprehension, cannot fail to involve us in a labyrinth of the most fruitless and visionary speculations.

Assuming, then, that the brain is the organ of the intellectual and moral faculties, Dr. Jackson presents the following arguments in favour of that opinion:—

"1. The sensations, which are truly a part of the intellectual phenomena, for they communicate the impressions that form ideas, are the actions of particular organs, and have an apparatus of organs destined to their accomplishment. The intellectual and moral faculties are phenomena of the same order, and, it is a fair conclusion, require a similar mode of development and exercise—that is, by particular organs.

"2. All vital actions emanate from material organs, without which they can

have, for us at least, no appreciable or known mode of existence. But the intellectual and moral faculties are only forms of vital action; they are not more wonderful or recondite in their nature, than most of the other vital phenomena, and if material organs are essential for the production of the one, it is a direct inference, they are not less essential for that of the other.

"3. The causes that influence the condition of the organs, affect the exercise or condition of the intellectual and moral faculties. Thus, food, drink, the weather, medicinal and morbid agents, frequently produce the most profound alterations in the state of these faculties, &c.

"4. The psychology, or intellectual and moral endowments of an individual, are not uniform in the different periods of life, in the different states of health and disease, of sleeping and waking; and these differences are invariably concomitant with particular conditions of the organs." p. 185.

Illustrations of these propositions might be furnished in great number, and by fair induction, from both physiological and pathological actions; but the principles they embrace are so self-evident, that we should deem it an act of supererogation to dwell upon the subject.

The next subject we shall notice, in connexion with the intellectual and moral faculties, is the question whether mind should be regarded as a unit, or composed of a single primitive faculty, as maintained by LOCKE, CONDILLAC, DESTUET TRACY; composed of a multiplicity of faculties, as maintained by KANT; or of the latter, each having a distinct and determined locality in the brain, as affirmed by GALL and SPURZHEIM. We cannot enter into the arguments by which the partizans of these several opinions have endeavoured to support their conclusions, nor do we conceive this necessary, as there are probably few philosophers of the present day who are conversant with the subject, and who are not convinced that the phenomena of mind are not of necessity manifested by a plurality of faculties. That these faculties, also, have special localities in the brain, is, we think, also fully demonstrated by a mass of facts, which no powers of sophistry can controvert. Many of these arguments are advanced by our author. In the execution of all functions, several acts concur in the completion of the process. This is manifested in the function of digestion, circulation, &c. The organs of the senses are separate, and each one executes its own peculiar mode of sensation, and as all our ideas are developed by impressions communicated to the brain by the senses, there must be a diversity, and consequently a certain independence in the modes of perception exercised by the different recipients of these sensations. The structure of the brain, too, is exceedingly complicate, which would not be necessary for the exercise of a single primitive operation; and experiments on this structure have, besides, demonstrated, that different portions of it

have a constant correlation with certain faculties. That in proportion as a given portion of the organ is developed, so is its correspondent faculty; that whatever injures a portion of the brain, injures or annihilates the faculty located in it. In animals, the same principles hold good to the full extent, and explain the difference of feelings, of habits, and other attributes by which they are characterized. The faculties are not simultaneously unfolded; nor do the different portions of the cerebral mass reach their perfect development at the same period. A correspondence is observed in the appearance of the intellectual and moral faculties. All men do not exhibit the same characters, which they should, making allowance for difference in degree, if the human mind were a unit. A full development, no matter in what direction, should be sufficient to constitute the most varied and exalted intellectual attainments. Man would be capable of the most preëminent attainments in every department: in philosophy and in music; in poetry and in metaphysics; in mathematics; in the fine arts; in mechanics, and in buffoonery. When the mind has been wearied by intense application, it should, according to the hypothesis of the metaphysicians, be incapable of further achievements, until recuperated by repose—yet it is well known, that when thus fatigued, it is only necessary to change the object upon which it has been applied, and it will still be capable of acting with energy upon other objects. The whole phenomena, moreover, of mental pathology, furnish a mass of evidence upon this point, too powerful and conclusive to admit of a doubt about the plurality of faculties, and the constant relation between them and the cerebral development. In his conclusions on this subject, we fully concur with Dr. Jackson—

“That the phrenological system of Gall and Spurzheim, in the designation of the faculties, and their classification, is absolutely freed from errors, will not be contended for, but its general truth and conformity with sound observation, will not admit of refutation or denial. It may be susceptible of improvements and of additions, but its fundamental propositions are founded in nature.” p. 215.

The observations which we have thus far made, apply, for the most part, to the intellectual faculties. It yet remains for us to take a hasty glance at the affective or moral faculties, which are examined somewhat in detail by our author. He divides them into two orders; 1. Propensities, that direct to the moral and social actions founded in the interests of the individual, and in which self is the predominant feeling. 2. Sentiments, by which are dictated the acts that affect the interests and actions of the beings by whom we are surrounded, and with whom we are destined to hold an intimate correspondence.

Much difference of opinion has existed in reference to the sources and characters of the sentiments which constitute these two divisions of the moral faculties. Those who have examined the subject in its most abstract relations, amongst whom our author mentions **LA ROCHEFOUCAULT**, **VOLTAIRE**, and **VOLNEY**, have represented them as ~~the~~ springing from a single primordiate principle of self-love; have ascribed all our moral actions to desire or aversion. Such a view is, however, untenable; for if the leading phenomena of our moral sentiments be carefully analyzed, it will be found that many of them cannot be traced to such a source. This explanation, it is true, might enable us to explain the sentiment of self-love, of attachment, and some others, but can we, on the same principle, comprehend the combative propensities of certain individuals, the firmness of others, the sources of a pure unsophisticated benevolence, of veneration, of a desire to acquire, so strong in some instances as to prompt to the most daring thefts; of a penchant to destruction, which, in some individuals, breaks through all bounds—impels the son to embroil his hand in the blood of a father or brother, and oftentimes for no desire of gain, no principle of antipathy or revenge: surely no sentiment of self-love can be recognised as the primordiate element of actions such as these.

The ancients, and especially the Platonists, made a nearer advance to truth, when they regarded the moral faculties as having a connexion with the organization, and located them in the abdominal and thoracic viscera; for these organs are unquestionably materially disturbed by many of these sentiments, and especially the passions. This doctrine has been revived, in various forms, by many distinguished modern authorities; amongst whom our author enumerates **BORDIEU**, **BUFFON**, **BICHAT**, **REIL**, **CABANIS**, and **BROUSSAIS**. The latter, however, while he adopts this hypothesis to a certain extent, blends with it the doctrine of Gall, and the phrenologists, who maintain that the moral faculties are seated in the brain, and that each faculty has its distinct and appropriate organ. “Our passions and our affections,” says M. Broussais, “are a result of our intellectual operations; but the following are, according to my views of the subject, the conditions necessary for their existence. The passions cannot exist without a number of sensations referable to the viscera; and all these sensations are founded on our wants, or our instincts.”—*Physiology*, p. 3.

This view of the subject is, we think, singularly confused, and results clearly from the distinguished physiologist in question having mistaken a part of the excitors of the passions for the faculty itself.

At one time he tells us the cerebral mass is the seat of the intellectual and moral faculties, and at the next moment that the viscera are also, to a certain extent, the seat of the latter. This cannot be. The viscera, or rather the ganglionic nerves, we have already seen, have an intimate relation with our instincts, and that the latter are instrumental in transmitting the wants of the viscera to the cerebro-spinal apparatus. As, therefore, one class of our moral or affective feelings, as already defined, are founded upon the interests of self, and as the instincts are the prompters to many sources of self-gratification, they, or in other words, the organs which are their seat, merely become the animaters of the corresponding faculties, or feelings, which, like the intellectual operations, can only be manifested by the brain.

But although the excitants of the feelings of this class are the instincts, or the internal sensations, the viscera are influenced in a different manner by some of the sentiments which belong to the moral or affective faculties. This is especially the case with that class of them which, from their intensity, merit the appellation of passions. The development of these is always attended with a vivid and inordinate excitement of the portion of the cerebral mass which constitutes the proper seat of the moral faculties; and as the nervous system, of which it constitutes the great centre, is extensively diffused amongst the different organs and tissues, it necessarily follows, that impressions made upon it, especially when intense, must be equally diffused amongst the organs, invigorating, retarding, or deranging their functions, and sometimes overwhelming them in a general torrent of impetuosity. This is precisely what takes place in the passions: the disturbance of the abdominal and thoracic organs is secondary, or consequential, on inordinate cerebral excitement, and does not take place, of necessity, as represented by Broussais, before the affective faculty can be displayed by the brain.

We think Dr. Jackson perfectly justifiable in his objections to the hypothesis of the distinguished physiologist just mentioned, and we cannot better give his views, and our own, relative to the point at issue, than by quoting the three following corollaries.

“For the production of the passions, or the action of the affective faculties, is required the concurrence, 1. Of special innate organs arranged in the cerebral structure; 2. Of particular impressions or irritations on the surface of the internal and external senses, and sometimes the action of other intellectual or moral faculties; 3. Of the perception of these impressions, or their repetition in the especial cerebral organs, appropriated to a moral faculty, and to which they have a relation; or the recurrence of these impressions by memory. When these circumstances are united, the affective or moral faculties are brought into exercise, the cha-

acter of which will correspond to the kind of impression made; or ideas recalled; and the particular organ or faculty to which these bear a relation, and which they uniformly excite to action." p. 230.

The views of the intellectual and moral faculties which have been advanced, prepare us for the study of their pathological states; and an application of them to pathology will convince us that mental diseases are founded upon the same causes, are influenced by the same laws, and are to be treated upon the same general principles as the diseases which affect other portions of the organism. Much had been done by Gall and Spurzheim to establish this branch of pathology upon correct principles. But Broussais has more clearly defined its laws than had been done by any preceding writer. The principles inculcated by our author are very similar to those advanced by M. Broussais, and the able manner in which he has considered the subject, cannot fail to contribute to the elucidation of a part of pathology which has been for so many centuries misunderstood. We regret that we cannot follow him through the discussion of the subject; as the section of his work devoted to its consideration, abounds with sound principles and judicious reflexions. We may, however, state in general terms, that the healthy phenomena of mind being dependant upon the healthy state of the cerebral organism, so its diseased manifestations are likewise connected with, or dependant on, a morbid state of the same organism. Irritation, under its various shades and modifications, is the immediate condition, and its excess in one or more organ, and its deficiency in others, its reflection into different portions of the organism, &c. furnish an explication of the various characters of mental diseases.

In his exposition of the seat of the irritation in mental alienations, we find the author again advancing the supposition to which we have already objected: that the mental faculties and sensations are seated in the cortical or ash portion of the cerebral mass. Did our limits admit, we could, we think, adduce many considerations to invalidate such a conclusion, and feel assured that it can neither be substantiated by the physiological or pathological states of the organ or its functions, by vivisections, or any other source of accurate observation. Indeed, the author himself advances the hypothesis doubtfully, or rather in the shape of a probability.

We shall here be obliged to pass over the whole of the chapter devoted to the consideration of the voluntary movements, as well as those on the expressions, and on sleep and dreams. We will merely observe that these topics are discussed with considerable ability, and that the subjects they involve are illustrated by many judicious re-

flexions. The space allotted to them, however, is too small to allow of their being treated in any other than a brief manner.

This brings us to the second part of the book, which as already stated, treats of the organic functions.

That which first strikes our attention is the function of digestion. By this, man, as well as all animals, are enabled to appropriate to ~~their~~ wants the various aliments which a bountiful Providence has spread before them, and prepare, by an appropriate elaboration, the nutritious molecules which they contain for the sustenance of the organization. The organs by which this high purpose is accomplished, are exceedingly diverse in their characters, according to the nature of the animal, and the kind of food on which it subsists. In the monads and polypi, the food is introduced merely by imbibition, but as we ascend in the scale of animal creation, we find the apparatus becoming more and more complex, always, however, bearing a strict relation to the kind of food upon which the animal subsists. Aliments derived from the vegetable kingdom being more difficult of digestion than that furnished by animals, a more complicated apparatus is necessary for its solution than is required for the digestion of animal food; and this is not the only peculiarity; for however perfect and complicated the apparatus, the animals endowed with it are only capable of digesting that kind of food upon which they have been destined to subsist, and herbivorous animals cannot digest animal food, or those which are nourished by animal food, vegetable substances; yet some, as man for instance, has been more favoured by Providence, and as his wants are more numerous, and his appetites more diversified, he is endowed with the power of subsisting on both vegetable and animal aliments.

We shall not follow our author through his exposition of the different portions of the digestive apparatus, but the following paragraph in relation to the physiological and pathological relations of the liver, contains sentiments so similar to those we have been led from our own observations and reflexions to adopt, that we hope we may be excused for quoting it.

"The situation of the liver," observes Dr. Jackson, "abstracts it from the direct impressions of most of the exciting agents of irritative actions in our organs. Its diseases are for the most part secondarily induced, either by sympathetic irradiations from other organs, or by disturbance in its functional offices. The stomach, duodenum and liver are most intimately associated through the celiac, hepatic, and solar plexuses of the ganglionic nerves, and their functions are directly concatenated. It is through the stomach and duodenum, the viscera directly and almost constantly exposed to aggressive impressions, that morbid irritations reach the liver. Most of the symptoms usually ascribed by systematic writers to diseases of the liver, belong, in fact, to chronic gastritis, and

to acute and chronic duodenitis, while some proceed from chronic colitis. The phenomena of these various affections are all grouped indiscriminately together as symptoms of either acute or chronic hepatitis. To this cause is to be attributed the erroneous diagnosis of the medical attendants of Napoleon, from Dr. O'Meara to Antommarchi, all of whom mistook the clearest signs of chronic gastritis, for hepatitis, and advised for the illustrious captive an incompatible treatment, which his good sense resisted and induced him to reject. The first lesson I acquired, in prosecuting pathological autopsy in the Alms-house Infirmary, was, that in very few cases, supposed from their symptoms to be hepatic disease, was the liver in the least affected; while chronic disease of the liver was detected, where none of the signs, commonly considered as characteristic of it, had existed. In not a third of the cases regarded as of hepatic origin, is the liver in the slightest degree concerned, and when it does become involved, it is only consecutively to a gastritis or a duodenitis that have been its precursors, in the majority of instances, from sympathetic irradiation. The continuity of the gastric and duodenal mucous tissue, into the interior of the liver, is another cause of the propagation of the irritation of the two first organs into the liver, but is a less frequent source of its irritations than sympathy." p. 341.

As regards the process of digestion, it is of a complicated nature, and is only accomplished by the concurrent operation of a number of organs. The food taken into the mouth is masticated, or finely triturated, by the action of the teeth and jaws. During this act it becomes saturated with the saliva, and in that state is forced into the stomach by the act of deglutition. It is here submitted to several changes, the assemblage of which constitute what is called the process of chymification, by which it is converted into a soft pultaceous mass, in which state it passes into the duodenum to undergo changes still more important.

The precise manner in which these changes are effected, is difficult to determine. Upon some points, however, our information is of a more definite character. The presence of the food in the stomach is always productive of an excitement of the lining membrane of the organ; its circulation is invigorated, and its secretions are augmented. The fibres of the stomach being moreover irritated, it is excited to increased contractions, and by these the alimentary mass is submitted to a constant change of position, becomes thoroughly blended with the gastric secretions; has its cohesive powers diminished, and is finally converted into a soft, pultaceous, homogeneous mass of a grayish appearance, and a sweetish, subacid taste, called chyme. But what are the changes which are produced in the alimentary molecules during the process? and what the agents which are instrumental in giving rise to them? Upon this point the most diverse and contradictory opinions have been advanced; some referring it to a mechanical trituration, effected by the coats of the stomach, some to a process of fermenta-

tion, some to putrefaction and maceration, while others have attributed it to a process of solution, accomplished by the agency of a peculiar secretion poured out by the stomach, which has been called gastric juice. It will be impossible for us to discuss all these different opinions; nor will it be necessary for us to do so, since many of them are so palpably untenable, as to deserve no serious consideration; while others, though applicable to the process of digestion, as it takes place in certain animals, have little instrumentality in that process in man. Mechanical trituration, doubtless, has much to do with the function of digestion in the gallinacea, yet in the higher orders of animals, the arrangement of the stomach is such as to be incompatible with such an agency.

A much more plausible hypothesis is that which attributes the solution of the alimentary mass to the agency of the solvent powers of the gastric juice. Yet it is extremely questionable if this fluid really exists in the stomach, under the characters represented by Spallanzani, and admitted by most succeeding physiologists. That a fluid is secreted by the coats of the stomach, capable of exercising a considerable solvent influence upon the alimentary mass, is incontrovertible, yet that it is a special fluid possessed of certain specific chemical properties, is neither proved by experiment nor observation. That such is not the case, has been satisfactorily proved, we think, by the researches of Montegre and others, and until the converse of the proposition is sustained by more powerful facts than any yet advanced, we shall, with our author, admit the theory of Spallanzani somewhat doubtingly.

"I obtained," says Dr. Jackson, "a portion of the contents of the fourth stomach of an ox. After standing a short period, it separated into a supernatant turbid liquid, and a feculence. This last was composed of two parts, the first, occupying the surface, was a fine pulp of a dull green hue, and the other, which occupied the bottom, was the insoluble fibres of the hay and straw that had been the food of the animal."

"When the supernatant liquid" was examined by Jones's improved microscope, it exhibited numerous minute flattened globules; these were transparent, but had the appearance of a dark opaque rim, caused, however, by the refraction of the rays of light. Floating in this liquid, were also small masses of an irregular shape, and semi-transparent, resembling gelatine. The fine pulp, when inspected by the same instrument, exhibited an infinitely greater number of the above described globules, and a much larger quantity of the semi-transparent gelatinous matter; it appeared to be composed almost entirely of them, mixed with a fine vegetable fibre. These globules are similar in their general appearance to those that proceed from animal food, excepting their size; it is much smaller." *p.* 352.

The chymous mass, taken from the pyloric extremity of the sto-

mach of a dog, presented a similar appearance, except that the globules were much larger.

From all his observations, our author concludes, that maceration and solution are the principal immediate conditions of chymification. But to render these effective, the mass must be agitated by the peristalsis of the stomach.

The next step in the process is that of chylicification. The changes by which this is accomplished are not less difficult of comprehension, than those which take place in the process just examined. What is certainly known on this subject is, that the chyme, after it enters the duodenum, combines with the biliary and pancreatic secretions, which produce some important changes in both its physical and chemical properties. What the precise nature of these changes may be, we are unable to determine. Various conjectures have been advanced on the subject, but none of them are satisfactory, and cannot be received in any other light than mere hypothesis. Dr. Jackson supposes the bile has some agency in separating the nutritious elements of the alimentary mass, in the form of chyle, or the elements of chyle, from the innutritive matters composing the feces.

"The general character of bile," he observes, "is alkaline, and it possesses a strong affinity for oxygen. In the stomachical digestion, acids are developed, and the aliment, it would appear, acquires oxygen, as amidon is converted in the stomach into sugar and gum. Chemists accomplish this same result by various processes, all which increase the proportion of oxygen in the amidon. In the second, or duodenal digestion, by the operation of the bile, a reverse action is effected. The acids are neutralized, and the tendency to the oxygenation of the aliment is arrested: it is even probable some portion may be deoxygenated. The acids of the chyme not only combine with the alkaline salts, but precipitate the colouring principle of the bile, the picromel, cholesterine, its resin, and its mucus, which are rejected as excremental. What other changes ensue, it is not easy to determine. In addition to the chemical actions between the bile and the chyme, the biliary fluid stimulates the mucous tissue of the intestines, increases the secretion of the intestinal fluids, and excites the peristaltic movements of the bowels, procuring their regular evacuation." p. 358.

We can only state in reference to these conjectures, that further researches are necessary to confirm the correctness of the conclusions which they involve.

The elements of the chyle being thus separated from the excrementitious mass, are taken up by the lacteal vessels, are conveyed through the mesenteric glands, being in their course more highly elaborated, and are finally poured by the thoracic duct into the tide of the circulation.

The feculent portion of the aliment, mingled with the various secretions, is propelled along the course of the intestines by their peris-

taltic action; is gradually deprived of its thinner particles, and is finally expelled in form of feces.

The pathological states of the digestive function are so numerous that we cannot even enter into an enumeration of them. Some of the more prominent are detailed by the author, but an exposition of their characters can only be fully made in connexion with the subject of pathology.

The next subject which presents itself, is the function of absorption. But as our readers having already had an opportunity of becoming acquainted with the views of the author on that topic from a preceding number of our Journal, we shall pass it over in silence. We must plead the same excuse for not noticing the sections devoted to the consideration of "*the pulse and its modifications*," and "*the pathological or abnormal states of the circulation*," the substance of which has been already published in this Journal. The chapters on the circulatory, respiratory, nutritive, and secretory functions deserve from us a more particular attention, the more especially as the various topics which they embrace, have been treated of, in an able manner, by the author. We shall not be able, however, to note more than a few points in relation to these subjects, referring our readers to the work itself for more ample details. The observations of the author on the pathological states of nutrition are highly interesting, and with one or two exceptions, are in entire accordance with our own views. These states, or conditions, may be referred to two principal heads: 1st, deviations of form; 2d, deviations of texture; the first consisting of the several abnormal states of the organism taking place for the most part as a consequence of a defective or excessive energy of its formative powers, or some perversion of the laws by which they are directed; the second usually proceeding from an exalted or defective irritation of the nutritive apparatus. The subjects which fall under this latter head are the most interesting to the pathologist, as they embrace directly, or indirectly, a large proportion of the lesions which he is called upon to treat. Many of the changes which characterize, or succeed to the condition so vaguely designated inflammation, are referable to this perverted operation of the nutritive functions: by it the tissues are submitted to a condition of atrophy or hypertrophy; may have their meshes altered, their cohesive powers augmented or diminished; may be softened or indurated, or completely broken down and disorganized, as in a full state of ramollisement, or gangrene, and sphacelus. A perverted action of the same apparatus may give rise to a deposition of new molecules within the areolæ of the different tissues, by which their characters may be so far altered as to assume all the attributes of other structures, constituting a natural component of the organism;

or those new molecules may give rise to numerous developments having no natural prototype in the system. Lesions appertaining to the first division constitute what are called transformations, or accidental analogous developments: those of the second kind constitute degenerations properly so called, or heteroclyte tissues. This division should be rigidly observed, as much confusion has originated from confounding the homoiclyte, or analogous products, with the heteroclyte tissues or degenerations.

Dr. Jackson accords with most modern pathologists in regarding the cellular tissue as the proper element and principal seat of most of these accidental developments. It constitutes the rudimentary condition of the entire organism in the embryo, and is, by a series of changes and modifications, transformed into the several natural structures which enter as components into the perfectly-formed subject. Thus far, these transformations are healthy, or physiological acts; but those which take place at a later period, which occur in the well-formed tissues, and metamorphose them into the characters of other structures, are pathological, and often involve mischievous consequences.

"The tissues," observes our author, "are not indiscriminately transformed into each other, but observe a certain relation and order in this respect. The cellular tissue, the common rudimentary element of all the organs, is the most frequent subject of transformation, and may be transformed, by a pathological process, *into every other tissue*. It never, however, passes into nervous tissue, except to replace it at the points where it previously had existed, and to supply the loss of substance; it is in this manner that divided and excised nerves are reproduced." p. 539.

The leading propositions laid down in this extract are unquestionably true—but the author certainly did not mean to affirm, as he has done, that the cellular tissue may be transformed, by a pathological process, into every other tissue. The muscular tissue is, for instance, never developed accidentally by any pathological act of the organism, and the bond of union which is established between divided nerves, cannot, we think, be with strict propriety, viewed as a transformation into a proper nervous tissue, notwithstanding it has been shown by various experiments to be adequate for the transmission of the nervous influence; for it has been satisfactorily demonstrated by Descott, and others, that when a considerable portion of a nerve, say the extent of an inch, has been excised, this restoration does not take place. Now, if it can be accidentally developed, to the extent of supplying the loss of the eighth of an inch, it should, in virtue of the same faculty, be redeveloped to supply the loss of an inch, and with the same facility. We therefore think, that the assertion of the au-

thor, relative to these transformations, is too general; and, as regards the muscular tissue, it cannot be sustained.

The degenerations, or heteroclyte tissues, are restricted by Dr. Jackson to two forms; *a*, tubercles; and, *b*, scirrhous or carcinoma. The observations relative to the development of tubercles are ingenious, but not altogether clear. Individuals of the lymphatic temperament are very correctly represented as most liable to them; and those who are endowed with the sanguine temperament in a high degree, and whose blood is rich in fibrine and cruror, are, on the contrary, much more rarely affected by them. But when Dr. Jackson speaks of the "*lymphatic vascular tissue*," as constituting their most probable seat, and represents them as consisting "*of concrete lymphatic pus, secreted into the muscles of the cellular tissue*," he employs a phraseology which is not likely to be correctly understood, and liable to lead to erroneous conclusions. With regard to the designation which he has applied to the particular vessels concerned, we regret to find him employing the same term which has, unfortunately, led to so much confusion in the writings of Broussais. He, if we understand him rightly, wishes to express by the term lymphatic vessels, those capillaries which are too minute to convey red blood, and which, consequently, circulate a colourless fluid. The term, therefore, having been by common consent, appropriated to the absorbent vessels, which cannot of course secrete the tuberculous matter, is unfortunate, as being liable to convey erroneous impressions upon the subject. The same objections may be urged against the term "*lymphatic pus*," which has been employed to represent the nature of the new development. The tuberculous matter is a special product, elaborated by a peculiar pathological state of the vessels, and is neither lymph or pus, or a mixture of the two. If we admit these materials as its constituents, we can no longer regard it as a degeneration, but merely a transformation of ordinary pathological secretions.

We cannot concur with the author in the explanation which he has offered relative to the manner in which the tubercles become softened. Whether we regard the changes by which this is accomplished as an act foreign to the tubercles themselves, as he and some others have supposed, or as a consequence of the vital operations taking place in the diseased mass, as represented by Bayle, Laennec and others, certain it is, the mere solvent agency of the secretions poured out by the investing sac, cannot be admitted as an adequate cause of the changes which take place.

The next section of the work is appropriated to the consideration of the secretions, which the author has treated in a very satisfactory

manner. We can only afford space for a few of his pathological reflexions, which we think deserve to be attentively considered. The various pathological conditions of the secretions are referred to four heads:—

"1. Simple increase of the secretion. 2. Vitiation, perversion, or alteration of its qualities. 3. Diminution, or entire suppression. 4. Its displacement, its *error loci*, on appearance in a part where it does not belong." p. 555.

Numerous exemplifications of each of these pathological states of secretion might be adduced, but we prefer rather to confine ourselves to a few remarks upon the subject of vitiation to which so much importance has been attached by ancient and modern pathologists, and to which has, indeed, been awarded by far the most considerable agency in the development of nearly the whole category of human maladies. •

"The vitiation of the secretions of the alimentary and digestive organs, is assumed, by some modern pathologists, as one of the most important elements in the class of diseases termed by them idiopathic fevers, and as justificatory of the lavish employment, in those affections, of active purgatives. This treatment is objected to by the advocates of the physiological doctrine of fever, who regard the idiopathic fevers of the nosologists as inflammatory irritations of some portion of the mucous tissue of the alimentary canal—that is, gastro-enterites, and purgative medicines as irritants acting on a surface already the seat of an irritation destructive of its functions, and threatening to its organization." p. 557.

The secretions being dependent for their properties upon the organs or tissues by which they are formed, whatever change or perversion they may undergo, must of course be a mere consequence of some antecedent pathological state of the solids, and must of course continue until the morbid aggression committed on the offending organ shall have been removed. We will not take upon ourselves to deny, that the secretions do in some cases become vitiated to the degree of acquiring properties offensive to the living organism, but we suspect the frequency of this occurrence has been greatly exaggerated, and we concur fully with Dr. Jackson in opinion, that in too many instances—

"It is most certainly a conjecture merely—that it has not been established by demonstrative proof, and must not, therefore, be admitted as a truth on which to build a theory, or be received as a sanction of unquestionable practice."

He has very correctly remarked, that as the vitiated secretion is a consequence of a highly irritated state of the mucous surfaces, the employment of drastic cathartics, the most intense irritants of the same surfaces, instead of exercising a salutary operation, could not fail to be attended with the same injurious operation as these supposed irritating secretions. Indeed, the organs possess, to a cer-

tain extent, the power of adapting themselves to their secretions, and the noxious properties of those products, admitting that they possess such, would be in that manner in a great degree obviated.

We should be pleased to notice the succeeding sections of the work, devoted to the consideration of the subjects of *animal temperature*, the *association* of the *organs* and *functions*, &c., but as we have already trespassed upon the patience of our readers, and have, we fear, extended these observations beyond a proper limit, we must come to a close. We do this with the less reluctance, as we feel assured that the work itself will, ere long, be examined by most of our readers, and from its pages a much more correct estimate of its principles can be obtained than from any observations we could make.

Having accompanied our author through the discussion of the various topics comprised in his work, it only remains for us, before we conclude, to express our opinion of the manner in which he has executed his task. This, though under all circumstances the most delicate, is to us, on the present occasion, the most gratifying part of our labours. We do not arrogate to ourselves the self-sufficiency to affirm, that because the sentiments of the author are in most particulars in accordance with our own, that they are necessarily correct; nor have we the presumption to suppose, that where we have ventured to differ from him, we may not be in error. The whole resolves itself into a mere matter of opinion, in which others may differ from us; but predicated our inferences upon such data as we have been enabled to obtain by an impartial and dispassionate examination of the various subjects which have been passed in review, we are peculiarly gratified in having it in our power to speak in terms of high commendation of the abilities manifested by the author in the execution of his undertaking. If clearness of conception, soundness of principle, and lucidness of detail, constitute the merits of a work, we feel confident in the assertion that the one we have under consideration, will be surpassed in excellence by few, either in this or any other country. Its publication will constitute an important epoch in the history of American medical literature, and no one who is at all ambitious of acquiring sound principles in his profession should fail to avail himself of the opportunity of drawing them from so pure a source. We understand that it is a part of the undertaking of the author to embrace the subjects of pathology and therapeutics. We feel certain, from the high promise presented by his present achievement, that we are only responding the general sentiment of his countrymen, when we assert, that the subsequent part of his labours will be awaited with the greatest anxiety, and hailed with the highest degree of pleasure.

E. G.

XIII. *Lettres de la Commission Médicale envoyée en Russie, pour Observer le Cholera Morbus; adressée à M. le Ministre du Commerce et des Travaux Publics, et lue à l'Académie de Médecine.* (Gazette Médicale de Paris.)

Observations on the Nature and Treatment of the Cholera Morbus now prevailing Epidemically in St. Petersburg. By GEORGE WILLIAM LEFEVRE, M. D., M. R. C. P. L. and Physician to the British Embassy, St. Petersburg. London, 1831. pp. 96.

Document Addressed by the Central Board of Health to the Privy Council. (Medical Gazette, January, 1832.)

WE did hope to be able in the present number of this Journal to offer something satisfactory respecting the pathology and treatment of the epidemic cholera; and that we are disappointed has not arisen from any paucity of publications, whose object is to enlighten us on the subject. Our table is loaded with works of that description, but the views of their authors are so extremely diversified—their observations so utterly at variance—that it is impossible, giving equal faith to all, to arrive at any positive conclusions; and we have therefore, instead of attempting the hopeless task of reconciling opposing assertions, thought it better to postpone the investigation until we shall learn something more respecting the capacity for observation of the different writers, and consequently the confidence that is to be reposed in their respective statements. In the meantime we may offer some additional remarks on the preliminary points of the inquiry, which, notwithstanding the large space we devoted to the subject in our last number, is far from being exhausted.

We have already noticed the appearance of the epidemic at Sunderland in October last; from thence it has since extended to Newcastle, Gateshead, North Shields, Houghton le Spring, Haddington, Pittington, and Edinburgh, and in February last it made its appearance in London.

As usual, some persons have resorted to contagion to explain the extension of the disease, but neither in England, nor in those places on the continent from which we have received authentic accounts of the origin of the epidemic, has any satisfactory proofs as yet been adduced of the disease having been conveyed by persons or merchandise. On the contrary, in several towns where the first cases have been well ascertained, it has been found that those earliest attacked had had no communication with persons coming from situations where the disease was prevailing, and that their receiving it from infected merchandise was equally out of the

question. The attendants on the sick, even in close rooms and crowded hospitals, have enjoyed the same remarkable immunity from the complaint which had been previously observed; merchandise imported from places where the disease was prevailing has not infected those who were engaged at the lazarets in unpacking it; and finally, the same atmospheric diathesis, the same remarkable predisposition to bowel complaints, appears every where to have preceded the pestilence, the eruption of which has usually followed immediately some sudden vicissitude of the weather. The dissipated, and those who are subjected to the greatest evils of poverty, to insufficient and unwholesome food, and imperfect shelter from the weather, and who reside in low, filthy, crowded, and ill-ventilated places, are the principal victims of the disease, which is usually observed to be confined to the close and dirty suburbs of large towns, rarely entering into the large and cleanly habitations of the richer classes.

We proceed to the consideration of some of the facts elicited since the publication of our last number, in support of these propositions.

It appears now to be ascertained that the disease commenced in the suburbs of St. Petersburg about the 14th of June, and in a few days it was disseminated over the capital, and this, says Dr. LEFEVRE, "so widely and so generally, as in most cases to preclude all idea of mere connexion with infected persons being the sole cause of its propagation." Dr. L. was called on the third day of the appearance of the epidemic to see a patient residing upon the English quay, a distance of at least three English miles from the place where it first appeared. She was an old woman, sixty-seven years of age, who scarcely ever left her room, who attributed her attack to indigestion, and died in less than twenty-four hours, with all the symptoms of cholera.* Dr. L. could not trace the least connexion between the patient, or those about her person, with that part of the town where the epidemic first appeared.†

The first case which occurred at Breslau, the capital of Silesia, was a person, named Jane Louisa Karlsdorf, residing in the faubourg of the Oder, a very damp place, intersected by marshes and stagnant water, and where intermittent fevers often of a pernicious character, always prevail; she was conveyed to the hospital on the 23d of September, 1831, and speedily died with all the symptoms of cholera. This woman was thirty-six years of age, was exhausted by misery, and had been affected with diarrhoea for twelve days. The most minute researches on the part of the public authori-

* P. 3.

† P. 32, 3.

ties could not discover any communication between this woman and any stranger or goods suspected of being infected. In fact, she had never quitted the city, had never been engaged in the traffic of clothes; the nearest cases of the disease were fifteen or twenty miles distant in upper Silesia, and all goods and persons entering Breslau were, as we shall presently see more particularly, subjected to the most rigorous quarantine.

In a few days after the death of Karlsdorf many persons were attacked with the cholera in the most opposite portions of the city, and the Bulletin of the 10th and 11th of October announce seventy-one persons to have become affected.*

The following letter addressed to the medical council of Moscow by eight physicians attached to the special administration, or chief physicians of the hospitals of the city of Astrachan, deserves to be quoted entire, as furnishing some very interesting particulars respecting the origin of the disease in that city, as well as to its capability of being propagated by persons and merchandise.

"We are convinced that neither goods, merchandisc, nor persons, can propagate the cholera, not that we are influenced by prejudice, or a prevailing opinion, we have arrived at that conviction solely from what we have seen and observed either in ourselves or others; the following are the proofs upon which this conviction rests:—

"1st. The cholera first appeared one hundred wersts from Astrachan, on board the vessel of war *Bacon*, arrived from the Isle of Sara, a place where the disease did not exist; this vessel was retained in quarantine at Sedlitz, and not one of the sick reached Astrachan.

"2d. The epidemic manifested itself rapidly and simultaneously in many parts of the city, without the sick having had any communication with those places.

"3d. The first person affected with the disease at Astrachan was not a person arriving from a suspected place, but a resident of the city.

"4th. The epidemic broke out, reached its greatest intensity, abated, and afterwards gradually disappeared of itself, without any quarantine measure being put in force.

"5th. At the commencement, and until the termination of the epidemic, we have all, without taking the least precaution, touched and rubbed the sick; we have daily visited the hospitals crowded with cholera patients; we have not feared to respire their breath, which was cold, and smelt slightly like something burning; and nevertheless, thanks to heaven, we have neither contracted the disease, nor conveyed it to our families.

"6. The hospital attendants, those who nursed and applied frictions to the patients, put them into baths, and took them out again, changed their linen, and who cleansed the chamber utensils, remained free from cholera.

"7th. The general conviction of the non-contagiousness of cholera, and con-

* Letter, &c. in Gaz. Med. 28th January, 1832.

sequently the free communication between the inhabitants, always ready to give aid to their relations and neighbours, to the sick and dying, has not retained the disease in Astrachan, notwithstanding it was the warm season.

"8th. Post mortem examinations of cholera patients were instituted in the city, in the hospital, and in the civil hospital, without any precaution, and with perfect impunity; and the same was the case in 1823.

"9th. The epidemic, after having continued for three or four weeks, disappeared spontaneously, notwithstanding the constant communications between the sick and well and the heat of the season.

"10th. The cholera, after having quitted the city of Astrachan did not return, although vessels arrived from Saratoff whilst the disease prevailed in that city; and these vessels brought merchandise, and also persons affected with cholera of whom several died. Nevertheless, the disease was not renewed at Astrachan. Merchandise and persons also arrived from the fair of *Nischuku*, and with like results.

"11th. Many villages remained free from cholera, notwithstanding constant communications with the city during the prevalence of the epidemic; for example, *Muiussoff-Houter*, five wersts from Astrachan, on the shores of the Volga, where whole families and workmen sought refuge, when the epidemic was at the height: it was the same with the village of *Ilozlatzokoï* and many others, where not only families but the sick were transported.

"12th. An additional proof that the disease is not transported by persons, is furnished by the fact, that when it occurred in Astrachan, in 1823, though it was considered as non-contagious, and no precautionary measures were taken, it disappeared in a month. At that period there was no quarantine; large masses of persons also daily left the city, nevertheless they did not convey the disease either to remote cities, or the nearest neighbouring villages.

"13th. In the military, as well as in the civil hospital, the linen and clothes of the cholera patients were transferred to other patients, without being previously fumigated or ventilated: the outer garments were not even washed, and nevertheless those who wore these did not become affected with cholera.

"14th. Several nurses and mothers affected with cholera, suckled their children, both during and after the disease, without the latter being attacked with cholera.

"15th. All the inhabitants of Astrachan preserved the same clothes which they had during the cholera, remained in the same houses, surrounded by the same furniture, without in any way purifying them, and thanks to heaven, they were not made sensible of any contagion.

"16th. Thus it results from these facts, that the city of Astrachan should be considered as offering the most convincing proof of the non-contagion of the cholera, since it broke out there when it was surrounded by quarantines, and disappeared when no precautionary measures were taken against contagion."

Dr. Lefevre also adduces some interesting facts tending to show that the disease is not communicated from one person to another either mediately or immediately. He states that he has found no instance in which the attendants of the sick, were affected with the disease, though in many cases they paid the most assiduous attention,

watched day and night by the beds of the affected, and administered to all their wants.

"I knew four sisters," he adds, "watch anxiously over a fifth severely attacked with cholera, and yet receive no injury from their care.

"In one case I attended a carpenter in a large room where there were at least thirty other men, who all slept on the floor among the shavings; and though it was a severe and fatal case, no other instance occurred among his companions.

"In private practice among those in easy circumstances, I have known the wife attend the husband, the husband the wife, parents their children, children their parents; and in fatal cases, where from long attendance and anxiety of mind we might conceive the influence of predisposition to operate, in no instance have I found the disease communicated to the attendants.

"As for many reports which have been circulated, and which *prima facie* seem to militate against the statement, I have endeavoured to pay the most impartial attention to them; but I have never found upon thorough investigation that their correctness could be relied upon, and in many instances I have ascertained them to be designedly false; so that as far as proof can be drawn from my own limited experience, I have none to offer in favour of contagion."

Striking facts of a similar import are furnished by the medical commission sent by the French government to Russia. During the prevalence of the epidemic at Moscow, five hundred and eighty-seven patients affected with cholera, and eight hundred and sixty labouring under other diseases were admitted into the hospital of Ordinka. This hospital consists of a single building of three stories communicating by stairs placed within the wards. The same attendants had charge of all the patients; the different articles of furniture were distributed without distinction to the patients and all their clothes were washed together by the same persons. Of the eight hundred and sixty patients above alluded to, not a single one became affected with cholera, and of one hundred and twenty-three hospital attendants, two only were affected, a man and a woman, both of whom were disposed to the disease by very irregular conduct, for which they had been censured. The relations of the cholera patients were also permitted to visit them, and without contracting the disease.*

In the marine hospital at St. Petersburg, of forty-three attendants on cholera patients, not a single one was affected.

Of two hundred and forty-three persons employed, in the marine hospital at Cronstadt, four only were attacked.

In the temporary hospital of the first quarter of the Admiralty at St. Petersburg, of fifty-eight attendants one only was affected with cholera, and he after drinking *kwass* when very warm.

In the Damidorf temporary hospital at the same place, of forty-four

* Letter, &c. in *Gazette Medicale*, for November 26th, 1831.

attendants, two women were affected with simple diarrhœa, and an apothecary with pleuro-pneumony, but not one with cholera.*

Dr. Baum, physician general to the town hospital in Dantzic, in a report drawn up for Dr. Hamett and communicated by the latter to the English Board of health, states that in his experience the disease certainly proved not to be contagious. In his hospital he says—

“There were five waiters always near the patients; eight men were employed in rubbing and bathing; nine medical men visited the patients, of whom one was always in the room in the day-time; two watching every night: no one of these twenty-two persons fell ill. Many patients suspected to labour under this disease were brought into the same wards, but the disease did not appear in them.

“Although the medical assistants, and the eight labourers, were constantly going from the cholera wards to the other patients, there were but five patients who caught the disease in my hospital. Now the number of patients on June 1st, amounted to three hundred; three hundred were received in the month of June, so that out of six hundred patients only five got the disease, which is much less than the common number of patients taken ill with cholera, among an equal number of poor, wretched, unhealthy people in the town. Of these five persons, only two became ill in the same room; the other three being scattered over the whole large establishment.”

Dr. Hamett says that there have been instances, at Dantzic of a wife or child, or both, having slept in the same bed with a cholera patient, without any bad consequences ensuing; and that the instances of escape of whole families, shut up in small rooms with cholera patients have been numerous. “In the history of the first appearance, and subsequent spread of the disease” at Dantzic he adds, “no evidence of contagion has appeared.”

Whilst the epidemic was prevailing at Breslau, the intercourse between it and the neighbouring burghs and villages was uninterrupted. For six or seven weeks three or four thousand peasants entered into the city every day, and returned to their habitations. Many of them had communications with the infected houses, nevertheless to many of these villages the disease did not extend. Thus a single case did not occur at Schertunecz, where more than two hundred persons repaired every day to their country seats; the large burgh of Marieneu, east of Breslau, and the villages of Fabitz and Neudorf, which join the city, and contain each from one thousand to twelve hundred inhabitants, equally escaped.

During the prevalence of the epidemic at St. Petersburg, constant and free communication was kept up between it and a village about fifteen wersts distant, that of the Germans, nevertheless not a single case of the disease occurred at the latter place.

* Letter, &c. in Med. Gaz. for 14th Jan. 1832.

As to the capability of merchandise to convey, and afterwards communicate the infectious germ of cholera, the Central Board of Health, in a communication to the Privy Council remark:—

“There is perhaps no question in the whole range of sanitary police, on which so many and such irrefragable facts can be brought to bear as on this; derived, too, from the most authentic and recent sources.

“Seven hundred and thirty ships loaded with hemp and flax from infected parts of the Baltic, arrived at the different quarantine stations in this country between the 1st of June and the 31st of December, 1831.

“Many vessels also arrived laden with wool and hides, yet not a single case of cholera occurred on board any of these ships outside the Cattigate Sea, nor amongst the people employed in opening and airing their cargoes in the lazarets.

“At the hemp and flax wharfs in St. Petersburg, where several thousand tons of these articles arrived during the spring and summer of this year, from places in the interior, where cholera existed at the time of their departure for the capital, the persons employed in bracking or sorting, and who generally passed the night among the bales, did not suffer so early in the season, nor so severely, as other classes of the general population.

“The same observation holds good with respect to all the rope-walks of St. Petersburg, and the imperial manufactory of lincn cloth at Alexandrofsky, where all the yarn is spun from flax bracked and hackled on the spot.”

The inadequacy of quarantine regulations to prevent the extension of the epidemic, seems now to be well established. They have been unavailingly resorted to by Russia, Austria, and various other countries; and by Prussia the experiment has been fully and faithfully tried. Sixty thousand of the best disciplined troops in the world were employed in that service, and the most rigorous restrictions, such as a despotic government only could exact, put in force. What have been the results? An immense expenditure of money, the suspension of commerce, a stop put to industry, multitudes deprived of the means of acquiring subsistence, and whole families plunged into misery, and rendered favourable subjects for the disease, but no stop to the extension of the epidemic; on the contrary, its progress was rendered more fatal. In addition to the instances formerly cited, Breslau may be quoted as affording an illustration of this. That city is the capital of Silesia, and contains ninety thousand inhabitants, active, commercial; and industrious, many of them manufacturers and artisans. A quarantine of twenty days, with difficulties often insurmountable which it entailed, was established at the borders of the province, and maintained with a rigour *which might serve as a model to other nations*. Moreover, there were lazarets at different points, where persons were shut up, who, after passing through quarantine, did not appear to be in good health. Finally, Dr. REMER was charged with watching the barques which arrived by the Oder. It was in the midst of this apparent security that on the 23d of September a woman was

attacked with the disease, under the circumstances to which we have already alluded, and in a few days the disease spread. To arrest the ravages of the pestilence it became necessary to ameliorate the condition of the poorer classes, and in the execution of means for this purpose, the public authorities saw too late the deep injury which the sanitary measures had inflicted; thousands of individuals, a multitude of families, were plunged in extreme misery. The sudden cessation of commerce had caused that of industry, and the suspension of labour had deprived many of the means of existence.*

Taught by the experience of Prussia, and that gained by herself in Galicia and Hungary, Austria renounced all her quarantine measures, and judiciously consecrated her pecuniary resources to the execution of measures for the palliation and alleviation of an evil which she foresaw she could not escape, and with the happiest results. The other nations of Europe appear to have nearly arrived at a similar conclusion. Several of the most commercial, as well as those still exempt from, as those where the cholera has already appeared, have lately very considerably reduced their quarantine restrictions against that disease. Lubeck, a territory perfectly exempt from cholera, has reduced quarantine upon persons and merchandise from forty-one to ten days. Copenhagen exacts only the same. In Prussia, persons and merchandise from infected places are quarantined only five days; Genoa and Great Britain have adopted a similar course.

All the nations of Europe are, indeed, abandoning oppressive quarantine restrictions, and it is to be hoped that they will not be resorted to in this country, where of all others it is impossible to effectually enforce them, and where, consequently, all the evils they entail will be experienced without any of the benefits, if benefits could result from their being enforced. It consequently becomes a solemn duty on the part of those whose province it is to watch over the public health, to make themselves well acquainted with the results of those measures abroad. These bodies will incur a fearful responsibility, if, through culpable ignorance, or because they may find their *interest* rather in flattering vulgar prejudices, than in removing them, they shall embarrass, with unnecessary restrictions, the commerce and industry of the country.

We must not close these hastily written observations without stating an interesting fact, which is, that the whole mortality in Berlin during the two weeks at which the cholera was at its height there, was less by two than it was during the same space of time whilst the late influenza prevailed in that city.†

* Letter, &c. in *Gaz. Med.* 28th January, 1832.

† Ibid.

BIBLIOGRAPHICAL NOTICES.

- XIV. *A Treatise on the Structure, Functions, and Diseases of the Human Sympathetic Nerve. Illustrated with Plates.* By JOHN FRED. LOBSTEIN, Professor of Clinical Medicine and Pathological Anatomy in the Medical Faculty of Strasbourg, &c. &c. Translated from the Latin, with Notes. By JOSEPH PANCOAST, M. D. 8vo. pp. 157. Philadelphia. Published by J. G. Auner, 1831.

In a former number of this Journal a review was offered of the original of the volume before us, and on that occasion copious extracts were presented from the text, and a summary of other parts, with the view to enable our readers to form an idea of the plan of Professor Lobstein's work, and of this author's opinions respecting the anatomy, physiology, and pathology of the sympathetic nerve. That ground having been so recently gone over, it is not our intention to revert to the subject on the present occasion, but simply to call the attention of our readers to the translation, now before us, of Dr. Lobstein's treatise, for which the scientific portion of the medical profession of this country will, we are convinced, feel under deep obligations to Dr. Pancoast. This gentleman's qualifications for the performance of such a task, were long acknowledged by all who have the pleasure of his acquaintance, and are fully made out by the manner in which the present undertaking has been executed.

It cannot be expected that we should dwell long simply on the subject of the translation; because, after all, the operation of conveying an author's thoughts and sentences in a different language is to a certain extent a mechanical one, requiring, in the one who sets about it, only a perfect knowledge of the language in which the author has written—an acquaintance with the subject treated of in the text, or at least, when the subject is of a scientific nature, with the principles, the peculiar phraseology and technical terms of the department to which that subject belongs; and lastly, a correct and clear style with which to clothe the thoughts of the author. The mind is not called into play for any other purpose than to arrive at the true meaning of the writer, and to convey it in appropriate terms; an operation of so secondary and transient a character, that the individual often forgets while constructing one sentence the import of the one that precedes. Hence we may safely say, that to translate, though doubtless a useful occupation, is nevertheless an ungrateful one, since the individual who sits down to the task may perhaps acquire some credit for fidelity to his text or for the correctness or even elegance of his style; but never for his knowledge in the department of science treated of in the work. His reputation for acquirements in that branch must rest on other foundations. Dr. Pancoast was probably aware of these circumstances, for he has not contented himself with simply offering us an English version of Dr. Lobstein's text. He has followed a practice very general, perhaps too general, in this country, of improving, as it is called, the work edited or translated by means of notes and commentaries. As Dr. Pancoast is known to have paid a particular attention to

the anatomy and physiology of the sympathetic nerve, it will not be improper to dwell a few moments on the additions he has made to Dr. Lobstein's publication. We hardly need say that in doing this it would have afforded us much gratification to be able to show, with some degree of minuteness, how far the notes furnished by Dr. P. have added to the utility of the work. This, however, owing to a want of space, we shall only be able to do in a very brief manner. But our task on the present occasion cannot be simply that of panegyrist, and while we feel every disposition to award credit to Dr. P. for the useful additions he may have made, he must not be offended if we indicate for his guidance, in case future editions are called for, some omissions he has made, and a few points on which we believe he has erred.

The notes on the chapter of the work containing the anatomical description of the ganglionic system are rather meagre, and add little to the information contained in the text. In one, which is found at the foot of page 30, on the nerves of the uterus, the opinion of the great German physiologist, Tiedemann, is very properly introduced. It might perhaps have been well to add a few words on Sir Everard Home's views relative to the nerves of the placenta.

In a note at page 40, Dr. Pancoast very properly remarks, that "when the minute details of neurology shall have become an object of particular study with systematic writers upon medicine, we will have much fewer morbid phenomena insusceptible of explanation, and the practitioner will be able at once to comprehend many of the peculiarities of diseases which have hitherto only been accomplished by the difficult remembrance of heterogeneous facts, or the subsequent correction of successive errors. He would thus; for instance, have no difficulty to understand why the excitation of the heart should early correspond with almost every irritation of the stomach, when he knows the close connexion formed between these organs by the sympathetic system of nerves." But to this Dr. Pancoast adds, "and also why it is so seldom deranged in diseases of the uterus and other inferior organs of the abdomen, between which there is no direct connexion." We can hardly believe that the fact mentioned in this sentence will be fully borne out by the result of experience; for we have reason to know, that acute irritation of the uterus excites the action of the heart almost as readily as acute irritation of the stomach—chronic irritation of both organs having the privilege of existing, sometimes a long while, without producing that effect. But in writing the note in question, Dr. P. has also been guilty of a little inconsistency, for, at page 33, he quotes Tiedemann, who positively affirms that the uterus is supplied with branches from the sympathetic, which must necessarily establish the connexion, the existence of which Dr. P. denies.

On the subject of the structure of the ganglia, Dr. Pancoast has added nothing to the information contained in the text. Yet the opinions on this topic of Professor Blainville, undoubtedly one of the first general anatomists and physiologists of the age, which are not alluded to by M. Lobstein, might have been very properly introduced by the translator. We shall not stop to notice the opinion in question, but refer such of our readers as may be curious on that subject to Blainville's *Lectures*, edited by Dr. Hollard, and to an article on the anatomy and physiology of the ganglionic system, inserted in the eleventh volume of the *North American Medical and Surgical Journal* of this city.

The following extract conveys interesting information:

"Of the distribution of these nerves, (sympathetic,) over the vessels throughout, and their influence upon their function, there cannot at the present time be a doubt. Some even assert that nerves from the cerebro-spinal system also run upon the arteries, and contribute directly to the maintenance of their functions; a fact with which I am not sufficiently versed to admit or deny; but most generally, at least, the influence of this system of nerves over the vessels is greatly modified by being mingled with the ganglia and plexuses of the sympathetic system. I have, in several females who had all the genuine symptoms of hysteria, such as the clonus and convulsions for a long period, seen, when the disease appeared to be solely confined to the thoracic and abdominal viscera, some of the small arteries of the hand affected with forcible and very evident jumping contraction, which, after cathartic doses of myrrh, aloes, and assafoetida, disappeared. In these cases there were neither disease or pain in the hand. The well-known throbbing of the arteries in the neck and head in such cases is also in point, as well as cases of great prostration of nervous influence, and anemia, when the heart and aorta have, for want of nervous energy, not enjoyed a perfect systole, and struck with a large surface against the parietes of the thorax, so as to simulate aneurism."

In the section on the physiology of the sympathetic nerve several interesting notes are introduced, which reflect credit on our diligent and intelligent countryman, and enhance the value of the present volume. Dr. Pancoast devotes, in the same section, three or four notes of some length to the investigation of the functions of the par vagum, and hazards on this subject opinions from which we must beg leave to dissent, and assertions, which we fear he could have much difficulty in substantiating. In one of these notes he remarks that the exact limits of the office which this nerve performs in the human system, has not yet been satisfactorily decided.

"It sends branches to many organs so entirely different in their functions, as the muscles of the larynx, lungs, heart, and stomach, that it is difficult to believe they are endowed with no other properties than those of the other encephalo-spinal nerves, that of communicating sensation and motion; neither of which, in their more ordinary development, can be said to exist in the heart and stomach. It is likewise in opposition to many of the most distinguished physiologists, that it is a dispenser of the organic nervous influence, an office which by Bichat, Gall, Reil, and Broussais, is said to belong solely to the great sympathetic nervous system. Mr. Brachet has asserted, (an opinion in which he seems to be borne out by the result of many experiments by different persons,) that the par vagum in these organs merely presides over the sensations, which are located in the interior organs, such as the want of respiration, hunger, thirst, &c. as the nerves of the lower part of the spinal marrow over the organs of urination and defecation; the sympathetic maintaining the organic actions of the parts. M. Gall asserts, that many of the nerves usually considered as sent from the par vagum to these organs, belong properly to the sympathetic. The intimate connexion between these nerves in the neck and thorax has already been described, and their direct communication in the epigastrium so emphatically depicted by M. Lobstein, seems in further corroboration of these opinions. It seems, therefore, that we are obliged to admit either that part of the structure of the par vagum is composed of filaments from the sympathetic, or that that nerve holds a middle station in function between the two grand divisions of the nervous system."

In another part of the work Dr. Pancoast says, that when these nerves are divided, the sensations of the organs, depending on them, are necessarily destroyed.

"The sensations of hunger and thirst are no longer communicated by the

stomach to the brain, and if the animal eats it is mechanically stopped, only by the plenitude of the stomach, without any feeling of satiety. The strongest emetics will no longer produce their peculiar influence on the stomach. In the same way respiration is affected, in this experiment, hæmaturia either ceases or imperfectly takes place, and the animal may die from the presence of black blood in the heart or brain." "In the experiment upon the horse, death took place by the gradually deteriorating influence of the operation upon the system of nerves which presides over the fountain of life, and not by collateral aid of suffocation."

Now, Dr. Pancoast will find by referring to the experiments of Dupuy, of Edwards, Breschet, Magendie, and especially to those performed by Dr. Calvert Holland, and recorded in that ingenious physiologist's work, entitled "*An Experimental Inquiry into the Laws which Regulate the Phenomena of Organic and Animal Life*," that the facts he mentions are positively contradicted, and that the theory of Brachet, plausible as it may appear, is disproved. He will find, by a reference to the writings of the physiologists we have named, and to an essay on the subject of the par vagum, contained in the appendix to the last American edition of Broussais' Physiology, that the nerve in question is one of motion, and not, as maintained by some, a nerve of sensation, whose office is to preside over the sensation of the wants. Indeed, we can hardly conceive how Dr. Pancoast could advocate the opinion we have alluded to on the subject of the function of the par vagum; seeing that at page 92 he gives a summary of the experiments performed by Philip, Brodie, and Broughton, and says—

"Every thing that diminishes the sum of the nervous influence transmitted to the stomach impedes digestion." "When digestion is completely suspended by the section of these nerves with loss of substance, that action may be reëstablished by means of galvanism, and the food contained in the stomach converted into chyme, with almost as much rapidity, and to all appearance as completely, as in ordinary circumstances."

We must remark, in reference to this paragraph, that the sum of nervous influence, the diminution of which impedes the digestive process, is not that which proceeds upwards from the stomach towards the sensorium, (which ought to be the case were the par vagum the nerve of the sensation of the wants,) but that which, as is admitted by Dr. P., proceeds downwards to the stomach. 2d. If the theory which Dr. Pancoast has adopted were correct, how could the action of digestion be reëstablished by galvanizing the lower end of the divided nerve, the current of whose action ought to proceed upwards, not in the contrary direction. 3d. If the nerve had the office assigned to it, the sensation of the wants would alone be annihilated in the case of division; but when food was introduced into the stomach, or air in the lungs, the functions of these organs might very reasonably be expected to continue, since the sympathetic nerves remained unimpaired. The contrary, however, is found to be the case. 4th. In such experiments were the functions of the par vagum of a sensorial nature only, we would be at a loss to account for the formation of chyme through the agency of galvanism on the divided nerve; for the fluid cannot in such cases operate by exciting the sensation of the want, there being no necessity for that sensation, as the stomach is already filled with alimentary substances, and the application being made to the lower end of the nerve which no longer communicates with the sensorium. The influence conveyed by this nerve, would, from

this circumstance alone, appear to be different from that contended by Brachet and others. 5th. If the office assigned to the par vagum by these physiologists, in reference to the function of respiration, were correct, we cannot account for the continuance of the latter after the complete division, with loss of substance, of that nerve. Respiration should stop instantly, as the animal could no longer experience the sensation of the want of a renewal of air in the lungs.

To these remarks we must beg leave to add, that Dr. P. has not rendered complete justice to M. Brachet, omitting, as he does, to state fully the views of that eminent writer respecting the functions of the par vagum. In his *Recherches Expérimentales sur les Fonctions du Système Nerveux Ganglionnaire*, a work of which we hope to be able to furnish a review in a future number, Mr. B. contends for the double origin of that nerve, and admits in it a double function—of sensation and motion. This Dr. Pancoast should have known and recorded.

We are glad to find that Dr. P. has taken no notice of Magendie's opinions on the sympathetic, or of our countryman, Professor Miller's publication on the same subject. The former of these writers, in pretending to raise some doubts as to the nervous nature of the ganglionic system, has been guilty of an absurdity; while the other has merely repeated, with high and undisguised pretensions to originality, what others had said long before, and much better than himself.

This article has already extended so much beyond its extended limits, that we have no room left for noticing several interesting and creditable notes introduced in the chapter on the pathology of the sympathetic nerve. We must mention, however, that we were surprised to find that no allusion is made by Dr. Pancoast to either Mr. Swan's remarks and experiments on constitutional irritation, and his dissections in tetanus; or to our countryman, Dr. Cartwright's dissections in yellow fever; in all which, the ganglia were discovered to be in a morbid condition. In terminating this notice we cannot abstain from once more expressing our thanks to Dr. Pancoast for the present translation, and for the interesting matter he has himself contributed. We sincerely hope he will continue to enrich our medical literature with English versions of standard foreign books, as well as with the fruits of his own observations and reflexions, conditioned by the occasional criticisms of independent reviewers, whose duty it is as much to point out errors and omissions with the view to excite emulation and promote future research and improvement, as to indicate in terms of approbation the services rendered to the cause of science by the writers whose works they are called upon to examine.

R. LA R.

XV. *Principles of Lithotrity, or a Treatise on the Art of Extracting the Stone without Incision.* By BARON HEURTELOUP, Doctor of the faculty of Medicine of Paris. London, 1831. pp. 438. 8vo. plates 5.

Notwithstanding some modest prefatory remarks, this work comes forth evidently, with the pretensions of a complete treatise on the subject of lithotrity. Seven years of study and intense labour have been devoted to the perfection of the instruments, and to their application in individual cases. It has the advantage also of having been preceded by so many publications, on this

new operation for removing urinary calculi, that justly, much may be anticipated. The preface, as usual, contains much of *defence*, and *attack*—of *denials* and *assertions*—and is characterized by the jealousies so easily excited among the members of the *learned* professions.

We cannot refrain from extracting one paragraph from the preface, and addressing it to *American surgeons*.

“To read some of the books which have been written on this new art, and see their poverty on the head of scientific action, and still more as regards the precepts which ought to be followed, one would be tempted to believe, that this art consists only in the introduction of instruments into inert and insensible bladders, and then to charge the stone indifferently, by gentle or forcible manœuvres and destroy it with more or less expenditure of time, as may happen.” They, (operators,) imagined no doubt that the organ in which they operated would accommodate itself to all the slowness of their operation and all the defects of their instruments; they have in fine, a most unfortunate idea of lithotritry, when, without preliminary examination of the organ, or previous knowledge of the form and volume of the stone, still less of the difficulties to which this form and size may give rise, without even giving to this body an appropriate position, they introduce without law or reason, and often with violence, an instrument, make the soft organ in which they operate yield to their hand, armed with a steel inflexible rod, and thus manage to seize the stone, which but too often is so little in harmony, either by its form or physical properties, with the power and construction of the instrument employed. Thus the operator concludes with his trouble for his reward, the patient with the pains he has suffered, and science is marked by a failure.” Preface, pp. xxii, xxiii.

Fortunate had it been, were these the only results that have occurred. There is much good sense displayed in this preface throughout, shown by many just reflexions, and candid confessions respecting lithotritry. The “introductory observations” which follow, and which, much in the usual stile of English works, occupy above forty pages, are of so general a nature and so superfluous, that they had better have been spared in a work which ought to have been exclusively practical to be useful. Our author treats his subject at some length, under the following heads.

First, The organs in which we are to operate.

Second, Of calculi; with regard to lithotritry; their symptoms, &c.

Third, The construction of the instruments calculated to destroy calculi; these are divided into lithotritic instruments properly so called, accessory instruments, destined to accomplish secondary indications, and those intended to support the patient, and to hold the lithotritic instruments during the operation.

Fourth, The circumstances which add to the success of the operation, or which may render it difficult, or altogether inadmissible.

Fifth, A description of the instruments, in relation with the urinary organs, and with calculi.

Lastly, Some unconnected observations, elucidations, &c.

Here we find a display of materials, which if properly handled could not fail to prove interesting. In order to present to the American reader a proper idea of lithotritry, that he may form correct opinions of its value or insufficiency, (and from the doubtful manner in which it is generally received, something definitive is now wanting,) let us in succession extract the substance presented in each of these divisions, not with a view to criticise, and still less in any

spirit of undeserved approbation. A personal acquaintance with the author, leads us to believe, that he is to be depended upon in his statements and that he is every way calculated, as well by his assiduity as by his skill and general talents, to improve that branch of the science he has undertaken to investigate.

In the first division, or that respecting the organs upon which we operate, is included an interesting account of the canal of the urethra; with many practical illustrations, tending to show the conformity of this canal, with the use of straight instruments, and its ability to allow passage to the fragments of broken calculi. As regards this latter point, it sometimes becomes one of the strongest objections to the operation of lithotrity, and unless obviated will tend strongly to debar patients from submitting to it. It has been our lot to witness the severe suffering produced by the forcible extraction of such fragments of calculi; laceration of the lining membrane of the urethra, and sometimes severe hæmorrhage, attending such attempts.

The actual condition of the urethra, although it does not often become the greatest obstacle to the success of lithotrity, is not to be overlooked in our prognosis in individual cases, obstructions of various kinds, thickening, great irritability, natural smallness of diameter, &c. sometimes prevent even an attempt to break up a stone, and much discredit will be brought upon the operation, as well as upon the operator, if notwithstanding, attempts should be made in opposition to objections of so important a nature.

"The absolute size of the urethra in the adult, is from three and a half to four lines, and we can estimate its calibre by measuring the anterior part, with a cylinder."

For a more detailed history of the structure and various diameters of this canal, we must refer to the work itself, where also will be found an account of the effects produced by the introduction of straight instruments into the urethra.

The bladder is next treated of, and in a manner creditable to the author, and highly useful to the practitioner of lithotrity. Its relative position, its gradual change of form and enlargement from the introduction of a distending fluid, and more particularly the precise condition of the lower fundus and neck, are matters of the greatest importance when we come to introduce instruments in the living body, for the purpose of extracting extraneous substances. Nor is this point one of indifference to the lithotomist; how often is he foiled in his first attempts to catch a stone, even with all the advantage of a free and direct opening into the bladder! Let him also be guided by such considerations respecting this organ, that he may act from knowledge and principle, and not groping about in the dark, trust to chance for the discovery of a stone in the first place, and subsequently for its extraction to terminate an operation, all the preceding steps of which have been so scientifically conducted. The whole account, indeed of the bladder, as presented in this work in relation to lithotrity, will prove of much interest to those who are advocates for its employment, and not uninteresting to the lithotomist. Our author's position is entirely new, in relation to the effects of distention, upon the capacity of the lower fundus of the bladder, and he seems to have devoted a great deal of study to this point. After much general matter, upon the influence of surrounding agents, he

"From this it follows, that if during the violent contraction of the bladder, caused by the injection of a large quantity of water, the anterior part advances towards the sacrum, if the posterior part advances towards the neck, and if the fundus is contracted and raised, the bladder *instead of being enlarged by the injection of a large quantity of water*, as would be the case were it an inert pouch, *diminishes in capacity towards the inferior portion*. Now, as it is precisely in this part that the operation of lithotrity is performed, we can readily conceive how important the knowledge of this fact is." p. 82.

After some further illustrations, he observes—

"That *when the bladder is in a state of contraction, if we let some of the water which it contains flow out, it increases in size at its fundus*. This is as we see, in direct opposition to the generally received opinion." p. 84.

Again—

"The bladder assumes a different form, when it empties itself under the influence of the will, or under that of its organic contractions," &c. p. 84.

Now all this is explained as follows—

"In the upper part there is only the muscular coat, and even this is weaker at the apex than elsewhere; whilst in the lower portion, there exists not only the muscular coat, which is itself very much developed, but also powerful auxiliaries; it is not therefore surprising, that when these two halves of the organ are contending together, the weaker should yield to the stronger, and that that portion which presses least upon the liquid, should become distended notwithstanding its contraction. If we now consider the great dilatation which may take place in the upper part of the bladder, as is proved by the large collection of fluid in some cases of retention of urine, we shall come to the important conclusion, that *the bladder may receive a large quantity of fluid without being dilated at its lower part*." pp. 85, 86.

Next follow some remarks upon "*columnar bladders*," having prominent folds likely to be caught in the forceps and pouches, which may conceal a stone; to these succeed inquiries relative to the precise position of the calculus, depending upon its form and size. The sum of which is,

"First, That the more spherical a stone is, the more immediately it becomes placed before the neck of the bladder, and consequently, being in the axis of the instrument, is more easily seized."

"Secondly, That the smaller a round stone is, the easier it is seized, since its small size keeps it at a distance from the neck, and consequently it is at the spot where the branches are most expanded." p. 100.

These observations will suffice to give an idea of the views advanced respecting the "organs in which we operate." This appears to us the most valuable part of the work, and the facts, *if they are facts*, are likely to form a solid foundation for future investigations in lithotrity. The author shows a disposition to treat the subject scientifically, and to base all he advances as to the application of instruments upon these data. Such should always have been the case, as well with those who have hitherto advocated the operation, as with others who have condemned it.

In the second division we have observations upon urinary calculi, but of so general a nature, that we may pass them over without further comment, with one exception; an attempt is made to point out the difference between the symptoms of a round and of a flat nucleus, soon after its descent into the bladder, and further, even to determine its *actual composition* from the first. The

particular symptoms, and the position of the stone in the bladder, constitute the means by which this valuable information is said to be obtained. The differences, and various phenomena tending to establish this theory are minutely detailed, but we must wait for further and more mature observation to determine their accuracy. Conclusions formed upon these data, are next drawn, and made to bear upon the application of the author's instruments, as calculated to seize and destroy a calculus of any form whatever; in conclusion, he observes—

"Thus we see the physical properties of calculi require the instruments to be differently constructed, in order to arrive at the important object of effecting their comminution in as short a time as possible, with the least movements possible, and in the most gentle manner for the bladder." p. 156.

The "general considerations on the instruments," which form the third division, present us with fourteen "general rules to be attended to in the construction of these instruments."

"These rules being given and established from an anatomical investigation of the organs, and from the study we have made on the physical properties of calculi, we shall be better able to appreciate the degree of perfection, to which we have carried the construction of each of the mechanical means now employed for destroying vesical calculi." pp. 162, 163.

These rules present us with all the desiderata to be obtained for the perfection of lithotrity; as might have been expected, our author's contrivances are not altogether inadequate to supplying the wants of the fourteen rules.

In opposition to the plans hitherto proposed, the following statement is advanced in the form of a proposition.

"To proceed as rapidly as possible in the destruction of vesical calculi, and at the same time with safety to the organ, it is absolutely necessary to have recourse to *lithotritic instruments differently combined*." p. 170.

These combinations are four in number.

"The first is the instrument which I have called '*perce-pierre*,' (stone-borer,) or *three branches with a simple drill*; this instrument is suitably constructed to destroy small round stones of five or six lines in diameter with facility, and pretty rapidly, but its action is merely to make a hole a little larger than the drill itself."

"The second combination is my instrument, '*trois branches à virgule*,' (three branches with a comma;) its mechanism for seizing the stone is the same as in the preceding instrument, but as regards the act of destroying, it is capable of producing in a stone an excavation of ten lines, and that in one attack; this is effected by means of a small steel blade, which projects from the perforating drill, and resembles the typographical mark, called a comma. This instrument is well adapted to destroy spherical stones of ten or twelve lines in diameter, and oval stones of this dimension in their smallest diameter."

"The third is my apparatus, '*évideur à forceps*,' (forceps excavator;) it is called '*évideur*' because it excavates spherical calculi of from fourteen to twenty-four lines in diameter; and '*a forceps*' because it grasps them in the same manner as an accoucheur does the head of an infant with his forceps. This instrument, from the disposition of its component parts, is well adapted to *seize and break round and very large calculi in contracted bladders*."

"Lastly. The fourth combination is my instrument, '*brise-coque*,' (shell-breaker,) so named from its being especially destined to crush the fragments resulting from the action of the excavators; these fragments, from their concave shape, resemble egg-shells." "The '*brise-coque*' adds to the power of commi-

nating fragments, the still more important property of seizing and rapidly destroying flat calculi, which, from their shape, are unfavourable to the action of all the other instruments." pp. 170-2.

These four instruments are supposed adequate to meet the exigencies of any case, adapted to lithotrixy, that may present itself. If the complicated nature of these is to constitute an objection to their introduction, for many reasons it will not be allowed to have much weight, *provided only*, they actually do accomplish the great end for which they were made. It is entirely useless to attempt to explain their mechanism, as this would require the aid of drawings, assisted by minute explanations, too extensive for this cursory notice.

Each of the instruments named, is now brought forward in order, and the motives for which it was constructed, explained; the particular construction of it, in all its parts, its mechanism, and its action upon calculi, are treated in a manner likely to extend the benefits of the inventor's skill, wherever his work may appear.

In respect to one instrument, we quote the following observation, which appears in the form of a note.

"I have lately discovered in the '*perce-pierre*,' a property till now unobserved, which I have rendered efficient by introducing certain modifications in its construction, and by making some additions, which serve as accessory instruments, in order to develope and bring into action the property of which I am speaking; it consists in enabling the surgeon to break into fragments the shells of excavated stones, by communicating to them, through the medium of the drill, the shock of a hammer. This new mode of proceeding, which I have called *system of percussion*, I employed for the first time on a seaman, operated upon publicly at the Military Greenwich Hospital; and it constitutes, with the system of *excavating and crushing*, three different means of destroying vesical calculi. I intimated before, in the *examination of calculi*, how important this new method might subsequently become; at present I only point it out, and will give a more precise idea of it when I have studied it more deeply. With respect to the system of *repeated perforations*, I allow it to subsist in this work, although I banish it from my practice, as often as the stone is of sufficient size to require several perforations to be reduced to fragments." p. 175.

Since this note was written, the author has been induced to seek for other means of putting the system of percussion into practice, as we shall see hereafter.

The motive for which the "*évideur a forceps*" was constructed, is thus explained.

"Although the action of the *trois branches a forceps* is very energetic, since it can produce an excavation of ten lines in one attack, this instrument is not however sufficient to excavate calculi exceeding ten or twelve lines; for comparatively to the size of such calculi, it only makes a hole, and does not produce the important result of breaking them into fragments, or of reducing them sufficiently, to render this rupture easy." p. 198.

After the explanations, he says—

"Here terminates the action of the *évideur*, for it has accomplished what it was intended for, namely, *having reduced to powder the largest possible portion of the calculus, without coming once in contact with the parietes of the bladder.*" p. 231.***
 "When the stone is hard enough to remain entire, after being excavated, it remains in the forceps in the form of a shell, firmly maintained by the four flattened extremities terminating the branches; this shell is very thin, excepting at the

posterior part, where it forms a sort of *dome*, and has been left according to the rules, of the thickness of a quarter of the stone's diameter; it is to break this dome, that is destined the *percuteur*." p. 232.

"The idea which we have already given, is sufficiently exact for enabling our readers to perceive the motives which induced us to construct this apparatus, and for rendering them competent to understand the details, which combine to form a system, by means of which we are able, *in one single attack, and by only once seizing the stone*, to do more towards restoring to health a patient having a large spherical calculus, than could be performed by the '*perce-pierre*' in a great number of long and painful operations." p. 233.

The "*perce-pierre*" being incompetent to seize and destroy the rough fragments left by the actions of the "*évideur*," and of the "*percuteur*," the "*brise-coque*" is next brought into operation.

"This end could only be obtained by means of a combination, which should be made to perform, as it were, at the same time, *the action of seizing and destroying with rapidity*. We have called this a system of crushing, and have discovered the means of accomplishing, with an instrument which we have named '*brise-coque*,' (shell-breaker,) all the data which were prescribed." p. 238.

"The system of crushing is applicable whenever the calculi or fragments assume a flattened shape, or, to speak more generally, whenever they present small diameters," &c. p. 239.

This instrument, consisting of only two powerful blades, which are protruded and withdrawn alternately, is capable of finding, seizing and destroying all *flat calculi*, a point of no small importance.

Respecting the "*accessory instruments*," which follow next in description, I shall notice only the *recto-curved sound*; with this instrument, it is said, we can ascertain the *size, form, and situation* of a calculus, with great accuracy. How useful to the lithotomist will this prove, in detecting the presence of a stone, which the ordinary sound so often fails to discover.

"It is a silver sound, hollow, and from two lines to two lines and a half in diameter; the body of it is perfectly straight, and seven or eight inches in length; the curve, which commences at the extremity of the straight portion, is equivalent to the fourth part of the circumference of a circle, described with the radius of an inch and a half." p. 265.

It is so arranged, that with the aid of a proper syringe, the bladder can at any time be injected, without removing the sound.

If the preceding observations of our author prove the practicability of lithotrity, it is in the sixth division, that we meet with a check to the idea of its universal application; this is precisely what the ultimate success of this operation required. The sanguine hopes of inventors of new instruments, as of new theories, too often run into extremes, and therefore they are seldom brought to a rational bearing upon actual cases, until time and unbiassed observation have trimmed them of what was *useless or incorrect*. Of "those circumstances which may contribute to the success of the operation of lithotrity, render it difficult or altogether inadmissible." The *age of the patient* is the first to be enumerated. In the first-place it is not recommended in young children, and then very old persons, with a loss of tone and power in the bladder, especially when it contains a large stone are not eligible cases. It is even stated that these circumstances constitute a direct prohibition to the operation.

"This want of power, in addition to the soft state of the coats of the urethra, and the varicose state of the neck of the bladder, which results from an organic

change produced by age, and sometimes from the presence of calculi, renders the expulsion of the fragments tedious, difficult, and sometimes impossible." p. 311.

This want of power is sometimes shown by a great degree of debility throughout the whole body, the urine flows slowly as if falling by its own weight, and especially when a gum elastic catheter being introduced into a bladder containing urine, it is only expelled with very little power. This objection however does not apply if the stone be small. Any small fragments in such cases can be extracted, by means of a large catheter invented for the purpose. In respect to this instrument, it is stated—

"We have succeeded in discovering a combination, which is in our estimation, one of the most important we possess; since it enables us to restore to health many persons, and chiefly those advanced in years, on whom we should not otherwise perhaps venture to operate." p. 312.

In respect to old patients he finally observes—

"Thus we see that as regards the age of the patient, several important considerations arise respecting lithotrity. We see that although well adapted to cure the adult, it becomes more limited in its applications, the nearer the patient approaches to either extreme of life." p. 313.

The second cause of inadmissibility may arise from the *constitution* of the patient. Fat persons so objectionable in the operation of lithotomy are affirmed to be preferable for lithotrity, as the stone and its fragments are much easier caught than in those at all emaciated. *Organic disease* may frequently become an insuperable difficulty in this operation; an *unhealthy subject* having some vital organ diseased, which is likely to sympathize with the urinary organs, is objectionable. This circumstance has not always been properly attended to, as it would seem sometimes, to have been sufficient that the patient had a stone, and therefore could with propriety be subjected to lithotrity. It is improper in those who have a strong *calculous diathesis*, or a great disposition to form nephritic calculi, and in whose bladder there may already be a number of stones formed. Here should be noted also the fact that an inflammation is often communicated to the kidneys sympathetically, in consequence of a stimulus given to the bladder. As regards the *urethra*, the objections that may apply in this part, are obvious and numerous; an inability to receive straight instruments, from the firm ligamentous attachments of the penis to the pubes, and from the orifice in the bladder being very high up; an unusually small size of this canal; strictures whether accidental or morbid; stones having lodged in the urethra "especially when they have become imbedded in the canal." When the mucous membrane is soft and fungous. Lastly, cases in which the "urethra is so extremely sensitive, that the introduction of a gum elastic sound produces insupportable pain."

The *prostate gland*, not unfrequently interferes with lithotrity. For example, enlargements either of the lateral, or of the middle lobe, and sometimes a cul-de-sac exists in this gland, arresting the course of the instruments; lastly, sometimes from its great breadth, it impedes the operator in the free manipulation of his instruments. In conclusion, we find it stated that "not to be unjust, however, towards the prostate gland, I will here terminate by remarking that it is too often accused of producing difficulties which result from totally different causes."

The condition of the *bladder* is a matter of much importance, and from many circumstances may arrest the practitioner of lithotrity; these are columns, pouches, distinct lobes, &c. of these lobes there may be two or three—one communicating with the urethra, the other with this by a small opening, and so on; now, if a stone be lodged in the second or third sac, it would be impossible to catch it by instruments introduced through the urethra: bladders which are too small, or very much enlarged, or diseased, as for example, with a *catarrhus vesicæ*, or paralysis, are improper; it is advanced as a maxim, that “as lithotrity can only restore calculous patients when the fragments of the stone may be expelled by the action of the bladder, the contractile power of this organ ought to be ascertained before deciding upon the operation.” Vesical polypi, a varicose state of the veins at the neck of the bladder, or a soft and fungous condition of the mucous membrane, do not absolutely prevent the operation, but are disadvantageous to it.

“Lastly, a great degree of organic derangement, whether in the bladder itself, or in the surrounding parts, may render lithotrity difficult, or forbid it altogether; for example, a malformation of the pelvis, an exostosis from the interior of this cavity, unnatural adhesions of the bladder, hydatids, an enlarged ovary, or pregnancy, may alter the form of the bladder, and impede the operation.” p. 346-7.

After these, in conclusion, we find adduced a difficulty arising from a “great degree of contractility of the bladder.”

“Sometimes it allows a moderate injection of water, but when introduced, the liquid is immediately expelled with great force, although an instrument has been used apparently of sufficient size to stop up the canal.” “In other cases the water does not escape, but the instrument is instantaneously grasped, and can no longer be moved,” &c. p. 347.

So much for the bladder: as regards the stone, this also requires some attention. The number, size, composition, particular form, &c. are here alluded to; but of these it is not necessary to speak more in detail.

Thus, we conclude this valuable portion of the work before us; the statements we have quoted give us much pleasure, as they indicate a disposition to discover what in reality is to be the amount of benefit to be derived from this new operation.

Of our author's newly-invented *rectangular bed*, we say nothing, as it would not be in our power to offer any satisfactory explanation of its mechanism. In the *concluding observations* it is observed, that—

“The only thing which has yet left me seriously to desire, is a combination better adapted to grasp and break up thick oval stones, than the three-branched instruments. These forceps do not answer well; a new construction is required, as I have already said, and I am at this moment actively engaged upon it.” p. 354. “It is the system of *percussion* established on principles hitherto unknown,” that is here alluded to.

Many cases are next brought forward to conclude the work, accompanied with a history of all the minute details which exemplify the utility and mode of action of the author's instruments.

In our extracts from this work we have endeavoured to present as correct

and connected an account of all that was new or useful, as our limits would permit; and have been more copious upon some points than others, from a conviction of their utility to the profession generally. We are perhaps a little too partial to lithotrity; and may be thought to have taken, on that account, a favourable impression of a work—pretending to extend the application of instruments for destroying urinary calculi while yet in the bladder. We can only say, that if all the author advances be strictly true, (and we can have no reason to doubt the correctness of his details,) the extracts alone which have been selected will justify us in our favourable opinion.

J. P. H.

XVI. *Handbuch der Chirurgie zum Gebrauche bei Seinen Vorlesungen*, von MAXIMILIAN JOSEPH CHELIUS, Der Medicin und Chirurgie Doctor, Grossh. Bad. Geheimen Hofrath, Ritter des Grossh. Bad. Zähringer Löwen-Ordens, ordentlichem öffentlichen Professor der Chirurgie, Director der Chirurgischen und Ophthalmologischen Klinik zu Heidelberg, und mehrerer gelehrten Gesellschaften Mitgliede. 4 Bände, pp. 1786. Dritte, vermehrte und verbesserte, auflage. Heidelberg und Leipzig, 1828-1829.

A Manual of Surgery, for the Use of Students. By MAXIMILIAN JOSEPH CHELIUS, Doctor of Medicine and Surgery, Professor of Surgery, &c. &c. 4 vols. 1828-1829.

Few literary undertakings are more difficult to accomplish than an elementary class-book suited to all the wants of the student. Such a work must be sufficiently full to convey a clear and satisfactory view of the various subjects treated of, without running into prolixity. It must be concise and perspicuous, without being so meagre, in its details, as to exhibit an incomplete exposition of elementary principles. It must be systematic in the disposition of the topics of which it treats; perspicuous in style, lucid in argument and illustration, rich in facts, and fruitful in principles fairly established by the rules of rigid induction. These are requisites which it must be confessed are difficult to meet with, and if the numberless manuals which are daily obtruded upon the public attention, with the avowed object of supplying the wants of the student, were to be judged by this touchstone, few we fear would be permitted to pass the ordeal. These observations will apply with strict justice to most of the elementary treatises on surgery, which we regret to say are singularly defective in many of the particulars designated. We must, however, make an exception in favour of the manual of surgery of Professor Chelius, the title of which we have announced above. We are, indeed, not aware of having seen any elementary treatise better calculated to aid the student in the acquisition of the first principles of surgical science, and to enable him to follow the lectures of the professor with advantage.

The various diseases and accidents which fall to the province of the surgeon, are arranged, by Professor Chelius, under the following divisions: 1. Inflammation and its varieties. 2. Diseases which consist in a division of the natural connexions of the organization. 3. Diseases which arise from a preternatural adhesion of parts. 4. Foreign bodies. 5. Degenerations of the organism and adventitious developments. 6. A complete loss or destruction of some part of

the organization. 7. The development of supernumerary parts. 8. Surgical operations.

In the first part the author treats of the general characters of inflammation, and its modifications, as erysipelas, the effects of heat and cold, furunculus, carbuncle, &c. and points out its various consequences or terminations. The subject is also examined in reference to its characters in the different tissues and organs which it implicates.

He considers, under the next division of the work, the subjects of wounds, fractures, clefts or fissures of the soft parts of long standing, fistula, dislocations, hernia, prolapsus, distortions, aneurism, varices, &c.

To these considerations succeed the investigation of adhesions between the fingers, &c. ankylosis, closure of the nostrils, abnormal adhesions of the tongue, of the gums and cheeks, stricture of the œsophagus and rectum, phymosis and paraphymosis, stricture of the urethra, closure of the vagina, mouth of the uterus, &c.

Under the head of foreign bodies, he treats, first, of those which are introduced from without; secondly, those which arise from the retention of some natural product generated within the organization, as ranula, retention of urine, retention of the fœtus in utero, &c. extravasations of blood; thirdly, those which arise from inordinate secretion, as cysts, hydrarthrosis, bursa, hydrocephalus, hydrorachitis, hydrothorax, empyema, hydropericardium, ascites, dropsy of the ovaria, hydrocele, &c.; fourthly, those which originate from a concretion of the secreted fluids.

The subject of degenerations comprise the hypertrophia of the tongue, goitre, enlargement of the clitoris, warty excrescences, scirrhus, cartilaginous and osseous transformations, fungus of the dura mater, adipose and encysted tumours, cartilages developed in the knee-joint, sarcoma, encephaloid tumour or fungous hæmatodes, polypi, and cancer.

The next division of the work treats of the various mutilations of the organization, and the means of correcting them.

Under the last head the author treats of the several surgical operations, from that of blood-letting up to those of a capital kind.

This is the order in which the different subjects are disposed, and these the topics discussed in the course of the work. The descriptions are generally concise and perspicuous; the reflections lucid and practical; the reasoning of the author clear and philosophical; the principles he inculcates in general in accordance with the present improved state of surgery; and the whole taken collectively, constitutes a code of doctrines and practical precepts which we can safely recommend to the student and even to the experienced surgeon. We can only say in conclusion that we should be pleased to see the work of Professor Chelius transferred to the English language. Such is its reputation in Germany, that it has passed through three editions within a short space of time, and a few faults of brevity, &c. amended, we feel, that if translated into our language, it would be found a valuable accession to our stock of surgical manuals.

E. G.

XVII. *H. M. J. Desruelles, Doctor's der Medicin, Wundarzte am Militair Hospitale für den Unterricht zu Val-de-Grace, u. s. f. abhandlung über den Keichhusten nach den Grundsätzen der Physiologischen Lehre verfasst, aus dem Französischen übersetzt, und mit Anmerken begleitet von GERHARD VON DEM BUSCH, Doctor der Medicin und Chirurgie u. s. f. Bremen, 1828. 8vo. pp. 316.*

Doctor H. M. J. DESRUELLES' Treatise upon the Hooping-Cough, agreeably to the Principles of the Physiological doctrine. Translated into German, with Notes. By GERHARD VON DEM BUSCH, M. D. &c.

The pathology of hooping-cough advocated by M. Desruelles, notwithstanding the little attention it has excited among the physicians of Europe and America, is certainly far more consistent than the confused views which are ordinarily entertained in relation to the seat and nature of that disease; it is at least supported by highly plausible arguments drawn from necroscopic observations, which ought not to be passed over without a more full investigation. Pertussis, according to M. Desruelles, is a bronchitis, accompanied with a cerebral irritation and congestion, occurring under an intermittent form, and which is the primary organic cause of the convulsive cough by which the disease is characterized. He proposes, therefore, to designate the disease by the term *bronchocephalitis*.

The correctness of this theory, and of the treatment which is based upon it, has of course yet to be tested by the result of repeated and more extensive observation. For ourselves, we offer no opinion in regard to it, either favourable or unfavourable. We should undoubtedly have been better pleased had the author given us more frequently the results of his own experience, in place of relying so much as he has done upon the statements of others. He has, it is true, very generally consulted the best writers on the disease, but he has not, we believe, weighed fully all the facts and arguments which stand in apparent opposition to the views which he has advanced.

In the very excellent translation now before us of M. Desruelles' treatise into German by Dr. Von dem Busch, the text of the author is accompanied with copious notes, either illustrating the statements of the latter, or referring to the experience and opinions of certain distinguished German physicians with which M. Desruelles appears to have been unacquainted, and occasionally expressing the translators dissent from some of the propositions of the author.

Although Dr. Von dem Busch does not furnish us in his notes with any clear exposition of his own views, yet we are led to believe, from many of his remarks, as well as from the general tendency of his arguments, that he adopts the opinions of Hufeland and others of his countrymen, viz. that the hooping-cough consists in an irritation of the mucous membrane of the bronchiæ, accompanied by a diseased condition of the eighth pair of nerves.

In a note on page 126 the translator remarks, that M. Desruelles, for the support of his opinions on the seat and nature of the lesions upon which he believes the phenomena of hooping-cough to depend—

“Evidently lays great stress upon the morbid appearances which are discovered frequently in the brain and its membranes of those who have died during an attack of the disease. But it may very properly be questioned,” he adds;

"whether these appearances, viz. congestion of the vessels, effusions of serum, and traces of preceding inflammation, &c. are not rather to be viewed as the effects of the disease itself, or the immediate cause of death, rather than as indicating the seat and nature of hooping-cough. Whoever has, only for a single time, witnessed a severe paroxysm of the disease, and observed the strong determination of blood to the brain which then takes place, will not be surprised that after death the vessels of the brain should be found in a state of congestion, or effusion within the cranium be detected. It is scarcely possible, from the necroscopic appearances in the brain, to determine whether its morbid condition has been occasioned by the increased congestion of that organ during repeated violent paroxysms of coughing, or is the consequence of a peculiar morbid irritation of the brain itself. To me the first of these suppositions appears equally probable as the second."

Objections such as this will, however, weigh but little against the arguments and facts adduced by M. Desruelles in support of his opinions.

Dr. Von dem Busch differs from the author likewise on the subject of the contagiousness of hooping-cough. The latter denies positively that the disease is ever produced or propagated by contagion, referring its cause to certain conditions of the atmosphere, and to the same sudden transitions of temperature as give rise ordinarily to other inflammatory affections. The translator, however, in a note on page 180, expresses his dissent from this opinion. He admits that the hooping-cough may in part be produced by certain atmospherical influences, as is the case with measles and scarlatina, but contends that the spread of the disease cannot depend alone upon the state of the air, but is due especially to a specific contagion generated in the bodies of those labouring under pertussis, and given off in a volatile form, causing, when it is applied to the body of an individual predisposed to the disease, the development of the latter. The very few facts, however, which are brought forward in support of this opinion, are capable of a very ready explanation without the supposition of contagion.

But as it is not our intention to enter into a defence of M. Desruelles' views, neither into a full investigation of the pathology of hooping-cough, we must here close our remarks. We are persuaded that a translation of the treatise of M. Desruelles into English would be favourably received by American physicians.

D. F. C.

XVIII. *On Baths and Mineral Waters. In two parts. Part I. A full account of the Hygienic and Curative powers of Cold, Tepid, Warm, and Vapour Baths, and of Sea-bathing. Part II. A History of the Chemical Composition and Medicinal Properties of the chief Mineral Springs of the United States and of Europe.* By JOHN BELL, M. D. Lecturer on the Institutes of Medicine and Medical Jurisprudence, &c. 12mo. pp. xviii—532. Philadelphia. Literary Rooms, Chesnut street, 1831.

This volume is devoted to the investigation of a subject full of interest to every practitioner of medicine, and which, we regret, has been too long neglected in this country; we allude to that of bathing. Physicians here, and elsewhere in the United States, are, we are aware, occasionally in the practice of sending some of their patients to the sea-shore for the benefit of bathing, and prescribe cold baths in a variety of cases. But we have

not yet been able to discover that they generally resort to such means otherwise than empirically, or at least that they entertain very precise notions respecting the mode in which sea or common cold baths operate on the economy, either as hygienic or curative means. Hence, a physician who visits, at the proper season, the places of public resort on the sea-coast, will there find individuals assembled from a variety of places, and labouring under complaints of a very dissimilar character, all of whom can hardly be expected to be benefited, except by some unforeseen and unexpected effect—some sudden effort of nature, by one and the same means—sea-bathing. It is natural to infer, therefore, that at least some of these individuals must have been sent to the places in question on the bare supposition that they might possibly derive benefit from a dip in the sea, and not on an extended survey of the disease, and a full knowledge of the *modus operandi* of the remedy. Hence also we find many of them returning home with their diseases much aggravated after trying the *experiment* with more or less perseverance.

If we mark the manner in which cold and shower baths are usually prescribed, we shall be struck with the same deficiency of fixed principles—the same glaring empiricism. As for warm and tepid baths, douches, &c. beneficial as they indubitably are in a large number of acute, though more particularly of chronic complaints, they are seldom thought of, and there are not wanting physicians so strongly prepossessed against them, even against pediluvia, that they oppose, in the most positive manner, their use, and affirm, notwithstanding a daily and unanswerable refutation of their views and fears in the practice of some of their less prejudiced brethren, that a catarrh, or an aggravation of the existing disease, is almost always the result of the employment of such measures.

But it is not simply on the score of utility to the practitioners of this country that we have reason to be gratified with the publication of Dr. Bell's work. Every American must feel no small degree of pride on reflecting that notwithstanding the productiveness of the press in England and France, in all the departments of medical science, it has not, so far as we have been able to learn, furnished in either of those countries a single work in which can be found so full an account of the different kinds of baths, and especially so connected a view of the effects of these on the animal economy, in health and disease, as in the present one. As Dr. Bell has well remarked in his preface, some have directed their attention in a more particular manner to the subject of the warm bath, others to that of the cold.

"A few, indeed, such as Marcard and Franceschi, have treated of the varieties of bathing, but they have done little more than to furnish a sketch, an imperfect outline, serving rather to excite, than to gratify curiosity. Neither by these, nor by other writers, have the operation of general and local baths of all temperatures, and of vapour baths, in both acute and chronic diseases, been examined with care, and the scattered facts on the subject collected and arranged after a regular method; nor have suitable inferences been drawn from them to aid us in the enlargement of the domain of therapeutics."

Dr. Bell does not restrict himself to an investigation of the utility and *modus operandi* of baths in diseases. He attaches much importance to, and dwells long on, their employment as a hygienic measure. Indeed, Dr. B. would seem to be willing to unite in sentiment with the talented Eustace, who regretted

that the moderns had deviated so widely from the ancients in their use of baths—that the use of these, both hot and cold, so wholesome, and sometimes so necessary, should not be rendered more easily attainable to those who stand most in need of them, the poor and labouring classes of mankind; and who added, in point of cleanliness, that the moderns “are far inferior to the ancients, or rather to the Romans, who seem to have carried this *semi-virtue* to a degree of refinement almost incredible.”

In the limited space assigned for this notice, it will, of course, be out of our power to offer an analysis of this volume, or even a summary of the contents of its various chapters. Let it suffice, therefore, to state that in the first Dr. Bell presents an interesting account of the importance attached in ancient times to bathing. In the second he treats of the skin, its anatomy, physiology, &c. The third chapter contains the author's division of baths; while in the succeeding ones he treats of the cold bath; sea-bathing; the warm bath; the hot bath; the vapour bath—dry, simple, and medicated; (under this last head Dr. B. speaks at considerable length of sulphurous fumigations, vapour from alcohol and camphor, iodine and chlorine inhalations;) and of douches or spout-baths. On each of these topics full and useful remarks are offered by the author, who points out the advantages of some of them as therapeutic agents; treats of others both in a hygienic and therapeutic point of view, and gives ample direction for the employment of all. Dr. Bell is, indeed, fully borne out in the remark, that the principles inculcated in this work, as those which ought to guide us in the use of baths, will be found applicable to the treatment of both acute and chronic diseases, and also in strict accordance with the general indications of cure, as based upon what is deemed the soundest pathology.

The second part of the volume, on mineral waters, is rather meagre, and ought perhaps to have been left out entirely rather than published in its present form. Had Dr. Bell done this, and offered at some future time a fuller treatise on this important and interesting subject—a task for which, we are convinced, he is well qualified, the work would doubtless have been well received by his professional brethren, and particularly by those who have not access to detached and foreign publications on mineral waters. The excuse of want of room cannot be admitted, there being no necessity for the author to append a short essay on this topic to a work of nearly three times its size on baths; while a variety of circumstances—the number of mineral springs in Europe and America—the diversity of their chemical elements—their beneficial employment in a variety of ailments—the empirical manner in which they are too often used, ought to have impressed him with the idea that mineral waters constitute a subject of perhaps more interest to the physician than baths, and admonished him of the necessity of treating of it in extenso. But however this may be, after offering a short historical notice of mineral waters, and an account of their chemical analysis, and saying a few words on the advantages of establishing hospitals at the springs, Dr. Bell remarks that the epithet of *mineral* has been applied by chemists and physicians to every water issuing from the earth, and impregnated with mineral or saline substances to such an extent as to receive a strong taste; and fitting it for a common beverage, and yet imparting to it such properties as to render it an useful agent when drunk, (or used externally,) in a great number of diseases. As regards their *modus operandi*, he lays down the

following propositions:—1st. That mineral waters, used for bathing or douching on a sound cuticle, act mainly in virtue of their caloric. 2d. That when taken into the stomach or intestines they have a double operation; the one common, and generally uniform, depending on their basis, or their pure watery vehicle; the other, proper and peculiar, being the effect of the saline and mineral substances held in solution. 3d. That if used under the form of bath or douche, the action of these chemical principles will have little or no effect except upon those parts which are deprived of their covering or skin—of course no effect on the general system except through the parts thus denuded.

These propositions may be, we have no doubt, to a certain extent correct; but we believe that in accounting for the mode of operation of mineral water when used externally in the form of baths, Dr. Bell has attached too limited an importance to the process of cuticular absorption and to the introduction in that way of the constituents of these waters. To this opinion we are led principally by the circumstances that some waters, when used in the way mentioned—sulphurous waters for example, being known to act beneficially in certain diseases, and that they contain ingredients which, when administered by the stomach, afford similar results in the same diseases;—ingredients by the way to which Dr. Bell makes no allusion in his account of the analysis of these waters.

Dr. Bell divides mineral waters into four classes; 1st, hydro-sulphurous, or sulphurous; 2d, acidulous or carbonated; 3d, acidulated ferruginous, or chalybeate; 4th, saline.

He next enumerates the principal springs of America and Europe, (England, France, Germany, Switzerland, Italy, and Portugal,) and presents the names of the most celebrated ones under the four above heads; each division admitting of a subdivision into thermal and cold. After this he presents to the reader a view of the chemical composition and the medical virtue of each class.

We were sorry to perceive that Dr. Bell has neglected to avail himself, in the preparation of the present essay, of some observations on mineral water which ought not to have escaped his notice. In speaking of sulphurous waters he seems to have been unaware of the fact of their containing iodine, the discovery of which fact is due to M. Cantu, of Turin, and was noticed by him in an essay published in one of the volumes of the memoirs of the academy of that city, and afterwards in the *Archives Générales de Médecine*, and other medical journals of Europe. We regret also to find that in his enumeration of the principal mineral waters of Europe, he makes no allusion to the waters of Castel Nuovo, Castellámare, Abano, Asciano, Egra, and other springs of Piedmont and Italy, which are as worthy of notice as many of those he enumerates, and a full and satisfactory account of which might have been obtained in Bertini's *Idrologia Minerale*, and Paganini's *Notizia Compendiata di Tutte le aque Minerale e Bagni d'Italia*, works which, as well as Del Giudice's *Viaggio Medico*, are not noticed in the present publication. We must also mention, that as Dr. Bell thought it proper to speak somewhat in detail of Assalini's researches on vapour baths, of his portable apparatuses, &c. he might have paid a similar compliment to Dr. Paganini, and mentioned somewhere the establishment which that distinguished physician has formed at Ollegio, for the preparation and employment, internal and external, of artificial mineral waters. Full notices of that interesting and useful establishment could have been found in Paganini's

numerous writings, as well as in essays published by Buniva, Griffa, and others.

That the account of American mineral waters contained in the present work, though the fullest we have seen, is not as complete as might have been desired, is not to be imputed to any want of exertions in our author. He states that he made application to different quarters for information touching the analysis of the waters of several mineral springs, and their medicinal virtues. By some no answer has been vouchsafed; by others, the notices supplied have been very meagre.

In terminating this notice we must be permitted to remark, that Dr. Bell's work, though entitled to much praise, and likely as we have said to be very useful to the profession, partakes, like almost every production which has issued from the "Literary Rooms," rather too much of the character of that class of writings which are designated by the epithet of popular. It *smells of the shop*, and is no doubt published with the view to be read as much by invalids and the public at large as by regular physicians. Against this kind of hybrid production we do not hesitate to protest. In doing this, however, we wish it to be well understood that we have no objections to the existence of popular works on hygienic or other subjects—works, the utility of which we are perfectly willing to admit. Our objections apply to those works which by being intended for medical men and the public at large at the same time, are generally too popular for the former—too scientific for the latter; defects with which we fear some of Dr. Bell's readers will feel disposed to tax his present publication. In our opinion, popular medical works should be restricted to hygienic subjects, and contain no more scientific terms or explanations than can be understood by the general reader. Under no circumstances should the author permit himself to touch on pathological and therapeutical subjects. These should be reserved for books that are strictly professional, and which ought never to contain trivial explanations and precepts, which however well they may suit the latitude of the knowledge of a reader uninitiated in the mysteries of the science, are unbecoming a scientific professional writer and annoying to a professional reader. L.

XIX. *Anfangsgründe der Anatomie des gesunden menschlichen Körpers*, von Dr. ADOLPH FRIEDRICH HEMPEL, 2 Bände, Fünfte verbesserte Ausgabe. Göttingen, 1827, pp. 1029.

Elements of Anatomy. By Dr. ADOLPH FREDERICK HEMPEL. 2 vols. &c.

This elementary treatise on anatomy has been singularly successful in Germany, it having already passed through five editions. In pursuance of the course generally adopted since the time of Bichat, the author divides his subject into general and special anatomy, and makes the consideration of the several organic elements or tissues, preliminary to that of the form, relations and connexions of the organs.

The solid parts of the animal organism all consist, according to the author, of an arrangement of fibres, and these he regards as the element of the entire animal structures. By various degrees of combination and modification these fibres form two classes of structures: the first comprising the tissues, properly so called, as the cellular, the membranous, the osseous, the muscular, the vascular, and the nervous; the second class is formed by various combinations of these simple tis-

sues, and constitutes the organs, or rather the parenchymatous structure of which they are composed. The several parts are succinctly described in the order in which they have been detailed, and their most prominent characters are perspicuously set forth.

We next have an exposition of the subjects appertaining to the department of special anatomy, which are considered in the following order: the bones and ligaments, the muscles, the organs of sense, the respiratory and vocal apparatus, the digestive, urinary, and sexual organs, the circulatory and the nervous system. All these parts are concisely described, and their characters are detailed with great perspicuity and order of detail. We consider the work of Professor Hempel as well adapted to the wants of such students as are just commencing their anatomical studies; but for those who are more advanced, the descriptions will not be found sufficiently full and comprehensive. E. G.

XX. *Nosologie und Therapie der Chirurgischen Krankheiten in Verbindung mit der Beschreibung der Chirurgischen Operationen; oder gesammte ausführliche Chirurgie für practische Ärzte und Wundärzte*, von C. J. M. LANGENBECK, Ritter der Königl. Guelphin-Orders, Professor der Anatomie und Chirurgie, &c. Vierter Band, mit einer Kupfertafel. pp. 600. Göttingen, 1830.

Surgical Nosology and Therapeutics. By C. J. M. LANGENBECK, M. D. Professor of Anatomy and Surgery, &c. Vol. IV. Göttingen, 1830.

In a preceding number of this Journal we had occasion to express a favourable opinion of the three first volumes of this work, and to explain the plan proposed by the author in its execution. Since then we have received the fourth volume, which fully justifies the approbation bestowed upon those which preceded it. In this portion of his work Professor Langenbeck takes up the consideration of the wounds of the individual parts, and treats successively of those of the head and face, upper and lower extremities, the neck, thorax, and abdomen. In connexion with the wounds of the head, he enters fully into the doctrines and discussions relative to the employment of the trephine; and while considering the injuries of the extremities, he discusses at length the principles relative to the operation of amputation, designates the cases in which it is necessary, and describes the method of performing the operation at all those points where it may become necessary. In conclusion, we can only offer it as our deliberate opinion, that the present volume, with those which accompany and are to succeed it, should be regarded as an invaluable acquisition to the profession, and that it is in every respect creditable to the high reputation of its distinguished author. E. G.

XXI. *De Secali Cornuto ejusque vi in Corpus humanum Salubri et inimica. Dissertatio Inauguralis Medica*. AUCTOR CAROLUS SAMUEL HAESSE, Gortitiensis. Berolini. December, MDCCCXXIX. 8vo. pp. 32.

An Inaugural Dissertation on Secale Cornutum and its Poisonous and Remedial Effects upon the Human Body. By CHARLES S. HAESSE.

In this short dissertation we are presented with a very accurate sketch of the natural history of Ergot, and a notice of its chemical properties, followed by an

account of the injurious effects which result when it is taken into the stomach in large quantities, as is often the case in various parts of the north of Europe, in consequence of the bread eaten by the poorer classes being made from corn, the greater part of which has become ergotized during the prevalence of wet and otherwise unfavourable seasons; and finally, of the beneficial effects of this substance in increasing the expulsive force of the pregnant uterus, and in this manner accelerating labour; together with the rules for its use, and the circumstances which forbid its employment.

It is somewhat remarkable, that the physicians of this country, and more especially those of England and France, should have remained until within a few years, ignorant of the peculiar properties of the ergot, when most of the obstetricians of the north of Europe appear to have been long familiar with them, and to have availed of their aid for facilitating delivery in certain tedious and difficult labours. The old *pulvis paturientis* of the Marbourg Pharmacopœia, is composed principally of ergot; while in Germany, the popular name of this substance, *mutterkorn*, or *gebärpulver*, indicates the general acquaintance of the people of that country with the effects it exerts upon the pregnant uterus.

The general rules laid down by Dr. Haese for the use of ergot, and his enumeration of the principal circumstances under which its administration is demanded, are in the main correct. We fear, however, that when he comes to detail the special indications for its employment, the very general and loose manner in which he expresses himself, will be apt to mislead the inexperienced reader, and cause the article to be far too frequently resorted to.

That cases do frequently occur when very great advantage is to be derived from the judicious administration of the ergot, no one who has seen much of obstetrical practice can doubt. It must, nevertheless, be admitted to be a dangerous remedy, especially to the infant, when rashly or improperly resorted to; and so strong are the temptations to induce the young and inconsiderate practitioner to employ it in improper cases, or at an improper period of labour, that we fear more harm, upon the whole, than good has resulted from its introduction into general use.

In the treatise before us, the ergot is stated to be useful to procure abortion, in certain cases in which an early expulsion of the fetus may become necessary to ensure the safety of the mother; it is directed also, at a later period of gestation, as a means of inducing premature labour. We doubt, however, very much, whether in either of these cases the desired result will be obtained by the use of ergot. We are well persuaded that, at least generally speaking, its administration will not be found to excite expulsive pains, unless these have already occurred naturally. Several instances have come to our knowledge, in which the ergot was employed to the extent of several drachms a day, for the express purpose of inducing abortion, but without exerting the least effect upon the uterus—in all these cases, gestation continued for the full period, and the females were delivered of live children. We have known also, the ergot to be given in large and repeated doses, by ignorant midwives, when pains simulating those of parturition have occurred towards the termination of utero-gestation, in order to quicken, as they termed it, the labour; but so far from doing this, the pains have occasionally ceased under its use, and labour has not occurred for several weeks subsequently.

The following are the circumstances, which, according to Dr. Aese, prohibit the employment of ergot. A very delicate and irritable constitution; a greatly relaxed and cachectic state of the body; hysterical or hæmorrhoidal affections; plethora, or predisposition to inflammation; the existence of peritonitis or other abdominal inflammation; in such cases, if the use of the ergot is considered to be necessary, bleeding should be premised; incipient osteo-malacia; malformation of the pelvis; disproportion between the size of the fœtus and of the pelvis; diseases of the soft parts, as descent, prolapsus, inversion or obliquity of the uterus; scirrhus of the uterus, &c. congestion or inflammation of the womb; adhesion of the placenta; implantation of the placenta over the orifice of the uterus; various decided nervous affections, as convulsions, eclampsia; spasmodic vomiting; rheumatic spasms of the uterus, &c. That the use of the ergot in several of these circumstances would be improper, is very obvious; in others of them we must confess, however, that we cannot perceive so clearly the necessity of its prohibition. The author enters into no explanations, merely giving the list without comment.

D. F. C.

XXII. *The Principles of Surgery.* By JAMES SYME, F. R. S. E. Fellow of the Royal Colleges of Surgeons of London and Edinburgh, Surgeon to the Edinburgh Surgical Hospital, and Lecturer on Surgery in Edinburgh. Carey & Lea. Philadelphia, 1832. pp. 375. 8vo. 1 Plate.

The object of this work is to present a statement of the leading facts and opinions which constitute the science of modern surgery, concisely expressed and systematically arranged, so as to guide the steps of students, and assist in directing the views of practitioners. This the author has accomplished in a manner creditable to himself and useful to students. The doctrines and practice he inculcates are those admitted by the best surgical authorities of the day. There is, however, one exception at least, that must be made to this, and that on a point of too much importance to be passed over unnoticed. It has been received as an axiom, that a moderate degree of inflammation is essential to the mode of union by the first intention, though the principle was equally inculcated, that when excessive, inflammation, so far from promoting, was unfavourable to, or entirely prevented that process. Mr. Syme, however, appears to deny the utility of any degree of inflammation to the process. He asserts that "*it is now ascertained that inflammation, so far from being essential to the process, is completely subversive of it.*" In this opinion we suspect Mr. Syme will have few followers. We must do him the justice, however, to add, that he admits that "a certain degree of excitement is not incompatible" with union by the first intention.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

PHYSIOLOGY.

1. *On the Influence of Lactation in retarding Conception.*—MR. ROBERTSON is of opinion, that there is something more in the vulgar belief respecting the influence of lactation in retarding conception than is generally allowed, and to determine this point, he has questioned 160 married women, who resort, in a state of pregnancy, to the Manchester Lying-in Hospital, and the following is a summary of the results obtained by him.

Of these 160 women, the average age was $30\frac{1}{2}$ years; their aggregate number of births 686, that is, $4\frac{1}{4}$ for each woman; the number of children which lived to be weaned 512, or 3, 1-5th for each; and the average age at which they weaned their children $15\frac{1}{2}$ months.

Of these women I found that 81 had become pregnant once or oftener during lactation, and that the remainder, 79, had never conceived under the same circumstances.

Of these 81 women who had become pregnant during suckling, I found that 27, who had produced 101 children, had conceived only 38 times during lactation; that 42, who had always become pregnant while suckling, did not, on the average, conceive till they had suckled for $19\frac{1}{2}$ months nearly; and that 22, (the remainder of the 81 women,) had been in the habit of conceiving during lactation, and soon after parturition.

The average age for weaning their children was different in the two classes of women—in those, namely, who had not conceived during suckling, and those who had conceived once or oftener while so engaged. For the 79 women composing the former class, it was $14\frac{1}{4}$ months; and for the 81 women of the latter class, it was $15\frac{1}{2}$ months.

Of the above 160 women, *ninety-nine* had never menstruated during suckling. Of the remainder, 61, the facts may be placed in a tabular form.

One woman who had suckled 3 children, menstruated only in one instance of lactation.

Two women	do.	7 children each	do. each only in one	do.
Four do.	do.	6 do.	each do. each only in one	do.
One woman was in the habit of menstruating after suckling 4 months.				
Four women were	.	do.	6	do.
Two		do.	7	do.
Two.		do.	8	do.
Two		do.	9	do.
Two		do.	10	do.
One		do.	11	do.
Seven		do.	12	do.
Two		do.	14	do.

• Thirty-one menstruated regularly during lactation.

Of those women who had usually conceived while yielding suck, Mr. R.

found that the majority did not menstruate; that in fact the appearance of the *catamenia* during lactation did not appear to have any influence in disposing to conception.

It further appeared as a general fact, that in healthy women, when the child was still-born, or when it died soon after birth, another birth took place within the ensuing twelve-months; and that, speaking generally also, women under forty years of age, and in health, conceived in from one to three months after weaning, whether that event happened at an early or at a comparatively late period after parturition.

The first corollary which Mr. Robertson draws from the foregoing facts is, that in seven out of eight women who suckle for as long a period as the working classes in this country are in the habit of doing, there will elapse *an interval of fifteen months* from parturition to the commencement of the subsequent pregnancy.

Second, That in a majority of instances, when suckling is prolonged to even thirteen or twenty months, pregnancy does not take place till after weaning.

Third, That lactation has an influence on the generative function; that up to a late period in suckling, probably in this country about fifteen months, conception does not in general occur; and that hence we are warranted in regarding the secretion of milk as the cause which regulates the periods of conception in mankind, as instinct operates to the same end in graminivorous quadrupeds, and probably in all other animals.—*Edinburgh Medical and Surgical Journal*, January, 1831.

2. *Deviation of the Menses*.—The following curious instance of anomalous menstruation has been communicated to the Medical Society of Paris, by M. BONFILS, of Nantz, and is published in the *Transactions Médicales*, for October last. A girl of the town, twenty-one years of age, nervous temperament, had long been subject to hysteric spasms, especially just before menstruation. From the period when her menses first appeared, which was at the age of nine years, she menstruated regularly, the discharge continuing about eight days, each period. Almost always, however, especially when she was chagrined, menstruation was accompanied by a sero-sanguinolent discharge, and often one of pure blood from the left mamma and axilla. In June, 1824, she was admitted in the "*Maison de Secours*," of Nantz, in the fifth month of pregnancy, with a syphilitic affection. She stated that during the first month of utero-gestation, she had had a copious and continual uterine discharge, which weakened her much. During the following months, she menstruated as usual, and the flow was always accompanied with a sanguinolent oozing from the left axilla and mamma. She was delivered at the seventh month of a living child. The lochia appeared and followed the usual course, and after six weeks the patient was transferred to the venereal wards. She was then put under treatment for the venereal affection. On the 26th of Feb. 1825, her menses reappeared, at the same time there was a discharge of blood from the parts already indicated, and which uninterruptedly continued until the 6th of the following March. During this period, when these parts were wiped dry, in a few seconds the skin, which was of a natural colour, was observed to become covered, for the size of a five franc piece, with a multitude of extremely small drops of blood, which, enlarging and uniting, formed in four or five minutes, two or three large drops, which, running together, flowed from the body. All the other functions were perfectly performed, and the patient did not apparently suffer from the discharge.

On the 7th of March, the sanguineous discharge from the vagina still continued abundant, but that from the axilla was replaced by another, which took place through the skin of the left flank, from a space of the size of a two franc piece. The patient had also a bloody taste in the mouth, and even expectorated some drops of that fluid. On the 8th and 9th, the discharge from the mamma continued, whilst that from the flank ceased, and another was established on the back, a little to the left, and towards the middle of the space, between the superior and internal angles of the scapulae. The surface from which the dis-

charge flowed, was two inches long, and one broad. The next day a discharge was established from a new place, viz. the epigastrium, the others continuing. The 12th, vaginal discharge considerably diminished, the flow from the other parts however continued, and from the epigastrium became more abundant. The patient was leeches to the vulva, and the next day bled from the arm. On the 14th, the menstrual evacuation from the vagina increased, and the flow from the back and epigastrium ceased; that from the mamma continued. On the 15th, there appeared a slight oozing of blood from the lower and external portion of the left thigh. On the 16th, the menses had ceased towards midnight, and reappeared at 3 o'clock the next afternoon. The discharges from the thigh and breast entirely ceased. The 17th, the menses were suppressed at 5 o'clock in the morning, and reappeared at 3 o'clock in the afternoon, as before. During the 18th, 19th, and 20th, there was a cessation of all the discharges. During the 21st, 22d, and 23d, the patient lost a few drops of blood from her left axilla, and during the night only, and the discharge appeared occasionally for the six succeeding days. The succeeding monthly evacuation was accompanied by only a slight oozing from the left mamma, and which continued but eight days.

In August, 1826, this woman was again admitted into the "Maison de Secours," when she stated that for a year she had menstruated regularly and naturally, without having had any anomalous discharge. She was a third time admitted, in June, 1827, for a syphilitic affection, when she stated that at the menstrual periods in April and May, her menses had been preceded, accompanied, and followed by a sanguinolent oozing from her axilla, the left mamma and flank; and in June, July, and August, the same circumstance occurred.

A few analogous cases are related by different authors; LE RAYMOND, *Traité des Maladies*, &c. p. 263.—*Dict. des Sciences Méd.* Tom. IV. p. 188.—*Annales du Cercle Médical de Paris*, June and July, 1822.—VALENTIN, *Voyage en Italie*, p. 252.—*Journal de la Section de Médecine de la Société Acad. de la Loire Inférieure*, Tom. II. p. 230.

3. *Anomalous Menstruation.*—The following case is recorded in the same Journal with the preceding, and was communicated to M. Bonfils, by M. BEGIN.—A young lady suffered suppression of her menses immediately after their first appearance in 1807, which was followed by swelling and suppuration of the glands of the neck. In 1815, she became affected with fluor albus, which was succeeded by an improvement in her health. In 1817, the leucorrhœa disappeared, and regularly afterwards, every month, the index finger of the left hand became tumefied, and covered with a violent tetter, from the surface of which, for three or four days, there oozed some drops of blood. This continued for three years, when the uterus resumed its menstrual functions, and the health of the patient was restored.

4. *On the Composition of the Blood.*—M. LE CANU, a pharmacist of Paris, has communicated to the Royal Academy of Medicine some interesting researches instituted by him, for the purpose of determining the composition of the blood in health, and its changes in disease. It is stated in the *Transactions Médicales*, for Oct. last, in which M. L's memoir is published, that the Academy have awarded him a gold medal of the value of \$ 1000 for it. From M. Le Canu's experiments, which appear to have been carefully performed, it results; 1st, that the blood of both men and women, besides the substances whose presence had been previously determined, contains an oily matter, which, by its solubility in cold alcohol its transformation into acid by alkalies, and the absence of phosphorus is perfectly distinct from the crystalline fatty matter; 2d, that to extract from this blood the red colouring matter, it is necessary to resort to a process different from that proposed by Berzelius, in order to obtain that of the blood of the ox, and that the best consists in introducing a slight excess of sub-acetate of lead into the water in which the fibrine is washed, in order to precipitate the albumen; 3d, that the proportion of the materials of the blood, and principally

that of the globules, varies with the individuals, so that the proportion of globules is greater in the blood of men than in that of women, and in sanguineous than in lymphatic persons of the same sex; 4th, that the blood of icteric persons contains the yellow and blue colouring principles of the bile, and that in some of them there is at the same time a much less proportion of red colouring matter.

PATHOLOGY.

5. *Hydrophobia*.—Dr. GODELLE, physician to the Hôtel Dieu of Soissons, relates in the *Revue Médicale*, for Sept. last, an interesting case of hydrophobia, which occurred six months after the bite of a rabid dog. The subject of the case, a woman, fifty-two years of age, whilst playing with a strange dog, in August, 1830, was bitten in the left cheek. She did not attach any importance to the occurrence, and entirely lost sight of it. Toward the middle of January, it was perceived that she had become very irritable, and easily vexed. She soon afterwards complained of wandering pains, which she considered as rheumatic. After this, it was observed that her sleep was agitated and unquiet, but on waking, she had no remembrance of any thing having disturbed her. On the 18th of Feb. 1831, the patient dined at 1 o'clock as usual, ate a good deal, but could not drink, which she remarked as very droll. In the evening, when Dr. G. saw her, she had a horror of liquids, of light, and of air. There were convulsive spasms of the whole respiratory apparatus, sobbing, slight horripilation. Pulse contracted and slow. The next day deglutition had become impossible; there was excessive and continued horripilation; extreme hydrophobic horripilation; copious perspiration, and very full pulse. The third day the symptoms diminished, and afterwards ceased; the strength became exhausted; there was transient delirium, depression of the pulse, lividity of the extremities, and prompt and tranquil death. The small wounds in the cheek exhibited no redness or change of any kind during the progress of the disease; the patient showed no desire to bite; she never adverted to the bite, or seemed to have referred her disease to it. She frequently repeated, "I do not know what my disease is, but I must die."

Unfortunately there was no post mortem examination, which is the more to be regretted, as no medicines having been administered, all the appearances would have been ascribable to the disease. Dr. Godelle's reason for not attempting a means for the relief of the patient, is sufficiently curious, and entirely characteristic of ontologism. It is because, we quote his own words, "*the antidote to this cruel virus has not yet been discovered!*" Two thousand years of unsuccessful search after antidotes, does not suffice for Dr. Godelle—we must persist in the same unfruitful pursuit.

As the relation between the bite of the dog and the disease in the above case, as cause and effect does not appear to us sufficiently established, we need not detail the attempted explanation by M. Carjol, of the manner in which the disease was developed. It will be sufficient to state that M. C. terms the period which elapsed between the bite and the occurrence of the disease, as the period of incubation, and he considers the disease as the organic reaction. He compares a virus introduced into the system to a ball, which, after having produced solution of continuity, developes a reaction, but when the solution of continuity is impaired, and the foreign body so placed as to be no longer injurious, the reaction ceases. This ball may remain for a long time innoxious in the body, until it is displaced, or from some other cause becomes injurious. The only difference between the ball and the virus, or miasmata, is, that their introduction requires no solution of continuity, for their absorption excites no disorder. The virus, or miasmata, once introduced into the system, may, he thinks, remain a longer or shorter time in our organs, without exciting pathological reaction.

6. *Ossification of the Pericardium.*—We find in our cotemporary, the *London Medical and Surgical Journal*, for November last, an instance of this in a young man, twenty-seven years of age, who died of ascites, with peritoneal inflammation. The pericardium, at its upper part, was completely ossified, forming a bony ring, enclosing the upper portion of the heart and extremities of the large vessels, an inch in breadth, and in some places a quarter of an inch in thickness.

7. *Perforation of the Stomach by latent Ulceration.*—The following interesting case of this is recorded in the *Transactions Médicales* for April, 1831, by Dr. DUPARCQUE. A young lady, eighteen years of age, who at the age of twelve had been affected with curvature of the spine, which yielded to treatment, and who enjoyed excellent health and was of a robust habit of body though affected with suppression of the catamenia and of a chlorotic colour,—became subject to eructation, slight colic pains, and tension of the abdomen after meals, but in so slight a degree that little attention was paid to her complaints. On the day on which she was seized with serious symptoms she had taken a long walk, according to custom, had frequently run up several long stairs, and taken a lesson in dancing without experiencing any feeling of fatigue. At five she dined heartily. At eight, as she was putting on her shawl to go out, she was seized with a fit of coughing and sneezing, in the course of which she suddenly felt a burning pain in the left hypochondrium, so violent as to produce fainting, and compel her to lie down. In half an hour her physician, M. Duparcque, found the abdomen moderately tense, and slightly tender only under the left false ribs. There was some general oppression; but the pulse and animal temperature being natural, he was satisfied with ordering leeches to the belly, emollient fomentations and complete rest. Nausea, attempts to vomit, and eructations occurred after his visit, and the lady's relatives therefore did not apply the leeches, thinking her complaint was merely a slight indigestion. But then the belly began to swell and grow tense; oppression, anxiety, and acute pain supervened; and at eight next morning M. Duparcque found his patient in a state of collapse, the countenance altered, the eyes dull, the limbs cold and blue, the pulse small, the abdomen enormously enlarged, tympanitic and fluctuating; and a short time afterwards she expired. On laying open the abdomen, much gas was discharged; the intestines were found distended; the cavity contained three pints of yellow, milky serum, with floating shreds of lymph, but without any trace of alimentary matters; and the visceral folds of the peritoneum, with the exception of that over the intestines and mesentery, were covered with a very thin and tender layer of lymph, especially on the anterior surface of the stomach and around the liver. The stomach was contracted. On its antero-superior surface, two inches from the cardia, there was a circular aperture, a line and a half only in diameter, without any appearance of adhesion between its margin and the concave surface of the liver, with which it must have been in contact. The cavity of the stomach contained several spoonfulls of clear fluid. Its parietes were unusually and uniformly thick; but the three coats were quite distinct and without any unusual appearance in point of colour or density. In the situation of the aperture there was internally a roundish depression, eight lines by five, the edge of which was perpendicular on one-third of its circumference and oblique at the rest of it. A layer of healthy mucous covered not only the whole mucous coat of the stomach, but likewise the depression up to the margin of the perforation; and on macerating the tissues, it was found that the mucous and muscular coats were wanting over the whole depression, but that the mucous coat had begun as it were to spread itself over the cavity, evidently showing that cicatrization had been going on.

In this case the violent and unremitting symptoms, which usually follow perforation of the stomach, were not present from the beginning, because in all probability the portion of the organ which was perforated lay in close contact with the liver, so that, when the opening was made, no part of the contents of the stomach escaped into the general cavity of the belly. It is extremely

probable from this circumstance that complete rest and the active use of antiphlogistic measures, with starvation for some days, might have been attended with limitation of the peritonitis, adhesion of the edge of the aperture to the liver, internal cicatrization, and recovery. The case is likewise interesting as a valuable addition to the instances already recorded of perforation occurring as the last stage of an ulcer, of the existence of which no previous symptom could be said to have been present.

8. *Seat of Hydrocele in Women.*—The *Archives Générales*, for July last, contains a translation of an interesting memoir by Dr. SACCI, which originally appeared in the *Annali Universali* for March, 1831, on hydrocele in women, a disease of rare occurrence, but which is mentioned by writers on surgery. Dr. S. asserts that he is satisfied that the opinions hitherto entertained respecting the seat of that disease are erroneous; and he remarks that it is not very unusual to meet in women with an appendix of the peritoneum analogous to that which accompanies the testicle in men, and that it is in this prolongation that the serosity which afterwards constitutes the hydrocele is first contained.

9. *Tubercles of the Uterus.*—Tubercular degeneration of the uterus is of infrequent occurrence. Bayle and Laennec make no mention of it; nor does Andral, in his *Clinique Medicale*, offer any example of it, though he indicates its existence in his treatise on Pathological Anatomy; Louis has met with it only once. Dr. REYNAUD states that he has met with three cases of it during six years residence in the hospitals of Paris, and he relates two of these in the *Archives Générales*, for August last. In both instances there was tubercular disease of the lungs as well as of the uterus. Both women had menstruated early, one at twelve, the other at fourteen years, and each had had several children, (seven.)

10. *Analysis of the Blood taken from a patient affected with Cholera.*—Dr. REYN CLANNY has communicated to the editor of the *London Lancet* the following interesting analysis of the blood drawn from a patient affected with cholera. The blood was detracted five hours after the invasion of the disease. The disease proved fatal in seventeen hours.

This blood, on applying the tongue, to it, Dr. C. says had no taste, nor any particular smell, as was equally the case with the colouring matter, the albumen, and the fibrine. It contained no gases of any description; was as black as tar.

For comparison, Dr. C. gives the analysis of the blood of a healthy person. This last contained one cubic inch of carbonic acid in the sixteen ounces.

	Healthy blood.	Cholera patient.
Water - - - - -	756	644
Albumen coagulated - - - - -	121	31
Colouring matter - - - - -	59	253
Free carbon - - - - -	32	66
Fibrine pressed and dried - - - - -	18	6
Muriates of soda and potassa, carbonate of soda and animal extraction }	14	0
	1000	100

11. *Pathological conditions of the Blood.*—M. DONNÉ has communicated to the Royal Academy of Medicine some microscopical observations on the blood, and some of the other fluids; the following extract from the report of the committee to whom the memoir was referred, furnishes us with a summary of the facts observed by M. Donné.

It is known that the blood is composed of globules, swimming in a colourless, transparent fluid. These globules in the human species are nearly spheri-

cal; this form is constant. But the form of the globules, perfect and regular in the healthy subject, is generally altered in many diseases, as M. Donn  has satisfied himself by examination with the microscope. In a healthy individual, the globules of the blood, perfectly round, surrounded by an obscure line, which very perceptibly detaches itself upon a plate of glass, are transparent at their centres, and are all of nearly equal diameters. On the contrary, in a person exhausted by long sufferings, and whose organs seem to have undergone marked alterations, the globules of the blood are less numerous, smaller, deformed, with ragged borders, and the regularity and equality of their diameters has disappeared. M. Donn  quotes the following facts:—

1st. The blood of a woman, twenty-six years of age, who died of gangrene of the lungs, and exhaling itself a gangrenous odour; globules small, and remarkably deformed; their periphery ragged.

2d. The blood of a woman who had died of puerperal peritonitis, (the patient had been copiously leeches; on post mortem examination but very little blood was found; there was a sero-purulent effusion in the abdomen, and a great softening of the liver, heart, and all the organs.) The globules of blood were less deformed than in the preceding case, but their contour was not smooth. The fluid effused in the abdomen contained but few globules, and these were very deformed.

3d. The serum of the blood of a woman who had been afflicted with a disease of the brain, and was bled for erysipelas: globules very small, and few in number; the blood of the coagulum did not exhibit a very regular form.

4th. The blood of a man bled for *bilious fever* with pneumonia: fine globules which had a tendency to unite together.

5th. The serum of the blood of a young girl affected with *bilious fever*: globules well-marked, little transparent.

6th. The blood of a woman who died of dropsy: contained extremely few globules.

7th. The blood of a woman who died of disease of the liver: globules beautiful, but commencing to become deformed.

8th. The blood of a young man who had died of acute peritonitis, treated by mercurial frictions: globules very much deformed.

9th. The blood of a young man who had died of the same disease, treated in the same manner: the globules had lost their normal form; some of them were very large.—*Journal Universel et Hebdomaire, July, 1831.*

MATERIA MEDICA AND PHARMACY.

12. *Gum-resin of the Olive Tree*.—Dr. GIANPROU, of Sebenico, states, that the gum-resin of the olive tree possesses purgative and tonic properties, and that he has used it with great success in the treatment of intermittent fevers. He gives it as follows:—An ounce and a half, (Austrian weight,) is divided into six parts, and one part taken every two hours. It produces two or three evacuations from the bowels, the appetite becomes excellent, and patients have told Dr. G. that their strength has sooner revived after taking this remedy than when they have taken the quinine.

Dr. G. states that he has given the remedy under notice in a great number of cases of epidemic intermittent fever, and with marked success. Several of these cases are related in the *Annali Universali di Medicina*, for June, 1831.

13. *Persesquinitrate of Iron*.—This article is strongly lauded by WILLIAM KERR, Esq. in a late No. of the *Edinburgh Medical and Surgical Journal*, as a remedy of great power in diarrhoea and some other affections of the mucous membrane of the alimentary canal. The following is his mode of preparing it.
“Take of small chips, or pieces of iron wire, an ounce and a half; nitric acid,

three ounces by measure; water, twenty-seven ounces; muriatic acid, one drachm.

"Put the iron into an earthenware vessel, and pour on the nitric acid, previously diluted with fifteen ounces of the water. Set the vessel aside till the whole of the acid has united with the iron, so as to form a persesquinitrate; then decant the liquid from the portion of iron which remains undissolved, strain, and filter. Add the muriatic acid with the remainder of the water, or with as much of that liquid as shall increase the whole solution to thirty ounces.

"The solution is completed in a space of time varying from seven to twelve hours, according to the concentration of the acid and the thickness of the iron. If a less dilute acid be used, the time will be shortened; but in that case the heat evolved is apt to be so great, as to produce other combinations of the iron and nitric acid. I have always been in the habit of using rather thick pieces of iron; and the time required for the completion of the process is then from nine to twelve hours; but a quantity made lately with bell wire was completed in little more than seven hours. When the process is finished, the liquid has a red colour, so dark, that viewed by reflected light, it seems almost black. The evolution of gas is then no longer perceptible. Three ounces of nitric acid of the usual strength, (1.4,) generally dissolve an ounce of iron, so that when the process is completed, a portion of the metal remains undissolved. The solution then consists entirely of the persesquinitrate of iron; and, if speedily decanted, it may be preserved in that state; but if allowed to stand for a few hours longer on the iron, it will undergo a further change, gradually becoming converted into pernitrate and protonitrate of iron. The first of these is insoluble, and renders the liquid turbid, and the latter, which remains dissolved, has not the medical properties which render the persesquinitrate valuable. Carbonate of soda throws down from the solution of the persesquinitrate a precipitate of a pure red colour; but if the process has been carried too far, such precipitate has more or less of a greenish tint. When the solution contains nothing but nitric acid and peroxide of iron, it slowly undergoes decomposition on standing; so that at the end of a few weeks the whole liquid begins to become turbid. The addition of some muriatic acid prevents this decomposition, and the quantity sufficient for this purpose is too small to affect the medicinal powers of the persesquinitrate. The solution, when rightly prepared, is of a beautiful dark red colour when viewed with transmitted light. Its taste is very astringent, and not at all caustic."

Mr. Kerr says, that to an astringent power, this remedy unites the property of diminishing the irritability and tenderness of the mucous membranes, with which it comes in contact.

14. *Constituent parts of Cinchona*.—According to Mr. R. BATTLE, the constituents of *cinchona cordifolia*, as determined by analysis, are, 1st, a free acid, easily disengaged by distilled water; 2d, quinine, obtained by neutralizing the acid No. 1. with magnesia; 3d, quinine independent of that which is in combination with the acid No. 1.; 4th, bitter extractive; 5th, resin; 6th, gummy matter; 7th, gluten; 8th, tannin, combined with gallic acid; 9th, colouring matter; 10th, muriate of soda; 11th, sulphate of soda; 12th, iron; 13th, woody fibre.

Quinine is a bitter substance of the bark, forming characteristic salts with acids, and not containing any of the principles from No. 4 to 13; it appears to be an elementary substance.

In the preparation of the *liquor cinchonæ cordifoliæ*, it has been attempted to combine all the efficient properties of the bark, (excluding Nos. 6, 7, and 13, in which no active principle can be discovered,) and it is presumed that the object has been effected in that preparation.

The *sulphate of quinine* can only be partially efficient as a medicine, in consequence of the absence of all the properties above mentioned, (from No. 4 to 13;) and the decided superiority of the *liquor cinchonæ*, as a medicine, being fully admitted by many competent judges, it appears to me to be of importance

to place that preparation under the attention of the profession at large.—*London Medical Gazette*, December, 1831.

15. *M. Bielt's Formulae for the Preparation of Pills of Proto-Ioduret of Mercury.*—M. BIETT employs the following pills in the treatment of syphilitic affections. 1st, R. proto-ioduret of mercury ʒj; powder of marsh mallow ʒj; M. Make into seventy-two pills. 2d, R. proto-ioduret of mercury ʒij; thridace ʒss; extract of guaiac ʒj; M. Make into forty-eight pills. M. Bielt commences with one pill a day for the first three days, and gradually increases the number to three or four a day, never more than one however at a dose. M. B. at the same time, generally orders an infusion of the saponaria, with a little of the syrup of gum and of capillaire.—*Gaz. Méd. Jan.* 1832.

PRACTICE OF MEDICINE.

16. *On Hemisrania.*—M. PIORRY, in a late work on pathology, diagnosis, &c. has devoted some pages to the consideration of this subject. As we have not received the original work, we copy the following notice from the *Medico-Chirurgical Review* for January last. M. Piorry "observes that, under the term hemisrania, authors have arranged several different disorders. Chaussier and his followers have pronounced it a neuralgia of intermittent or continued character, and of greater or less intensity. The author agrees with this opinion; but observes, that hemisrania cannot always be considered as a facial neuralgia. It differs, he remarks, materially from tic douloureux, and also from the pains occasioned by carious teeth. If, indeed, says he, we understand by the word hemisrania, a pain seated on one side of the head, almost all neuralgia of this part must become under the designation, since few of them attack more than one side of the body, or pass the median line. But if, by hemisrania, we mean a specific affection, having its seat in or near one of the eyes—differing from all the other neuralgia—followed by sickness and generally relieved by vomiting—ceasing after a single paroxysm, not to return for a considerable time in general—then we must separate hemisrania from the other neuralgia with which it has hitherto been confounded, in order to study its symptoms, its signs, and its treatment. The author affirms that he has paid great attention to this disease—and thinks that investigation of it throws some light on the neuroses in general.

The complaint in question is conceived by the author to be a neurosis, or rather neuralgia of the iris, which, at first bounded to that membrane, or, more properly speaking, to its nerves, extends to a number of other nervous branches, and is characterized by disturbance of vision, succeeded by pain in the eye, or on the surface of the cranium, by sickness, and by vomiting. This ophthalmic neurosis is observable among people whose sight is weak, to whom strong light is disagreeable, and dark rooms pleasant—who study and write much—who lead a sedentary life—and among workmen who are much occupied with the inspection of minute bodies.

On the other hand, we rarely see this complaint in people who lead an active life in the open air—who are habitually exposed to a strong light—and who do not exercise the eyes much. It occurs chiefly, according to the experience of the author, under two opposite conditions of the stomach—a state of too much repletion, and too great abstinence. In people in these conditions a very slight exertion of the eyes will often bring on the ophthalmic neuralgia. A physician of the author's acquaintance generally experienced an attack of this complaint every time that he read a lecture on medicine. Whenever he left off lecturing, or at least the reading of his lectures, he ceased to have the hemisrania; and whenever he resumed the avocation, the disorder returned. It was remarked that these lectures were delivered on a full stomach directly after dinner.

The hour of attack, however, is not confined to any particular period—sometimes immediately after the application of the exciting cause, sometimes not till after several hours, but generally within the twenty-four hours. At the moment of invasion, the sight becomes less clear, and there appears a kind of black speck in the centre of the eye, which gradually enlarges and spreads to the other parts of the organ, still partially surrounded by the arc of a luminous circle, of different colours in different individuals. After a time, this dark centre and sparkling circle begin to grow less distinct, and at last break up and disappear, with return of vision. These phenomena rarely take place, except in one eye. Thus far there is no pain experienced; but only a kind of stupor, with some derangement of vision and heaviness of head. But after a longer or shorter interval, some darting pains are felt in the eye and temple, and the least pressure on the ball of the eye causes much suffering. The patient complains that the globe of the eye feels too full, attended with pulsation of a dolorous kind. These sensations are not uniformly pungent, but remit and exasperate, like colic or spasmodic pains in other parts. The duration of these attacks varies from some hours to two or three days.

Meantime the senses of hearing, tasting, and smelling are more or less deranged with that of sight. The eyelids become red and tumefied—the access of light is insufferable—the least noise offends the ear—and the taste for food is quite perverted. The sensorial functions are undisturbed; except that there is a greater tendency to sleep than usual.

Such are the phenomena of cases the most simple; but very frequently the stomach participates in the complaints of the eye. Soon after the ophthalmic symptoms commence, eructations from the stomach take place, followed by some nausea, and even by vomiting of the food lately taken, or, if empty, of glairy mucus. In severe cases the stomach is not the only organ which sympathizes with the eye. Often one side of the tongue or of the face; or one of the upper or lower extremities experience a kind of painful tremor or vibration, like that which is felt after striking the cubital nerve, at the elbow, against some hard body. In general, the heart, lungs, and intestinal canal remain free from any morbid affection. A restorative sleep usually terminates the paroxysm, after several hours, or two or three days' duration. A heaviness of the head is felt for a day or two after the cessation of the hemicrania. The recurrence of the malady is uncertain; and generally only when the exciting causes are strongly applied. Our author knows a female who has six months' interval between the attacks, provided she does not read within two hours after taking food. If she uses not this precaution, she is sure of an attack immediately after her transgression. In certain individuals the attack is periodical, returning every eight days, every month, or every two or three months, with considerable regularity. In others, there is no fixed period for relapse.

The prognosis in this curious complaint, is generally favourable, as far as life is concerned; but if the complaint proves rebellious, it renders life miserable. When it fails to be cured, the paroxysms return at shorter and shorter intervals, till life becomes one scene of suffering. Our author has not been able to find any information respecting the pathological anatomy of hemicrania; but suspects that the scalpel will not reveal any lesion of structure in the brain or membranes to account for the phenomena. This neuralgia, he imagines, is too fugitive, subject to too many remissions or intermissions, to leave organic traces that might be detected by the eye. He justly observes that the dissecting room is not the only place where we may study pathology. The sick room will often afford us much useful information in this respect. An examination of the eye, during the attack of hemicrania, shows the pupil strongly contracted, and, consequently the iris put upon the stretch, with redness of both palpebræ. From these phenomena M. Piorry concludes that, in hemicrania, an exciting cause acts on the retina and iris—the nervous action is modified—a kind of struggle takes place, evinced by oscillations and vibrations, with the luminous circle, dark spots, &c. before alluded to. In time, the fifth pair of nerves participate

in the morbid action, and ultimately other organs and parts with which the fifth pair communicate.

Treatment.—Our author considers himself as very successful in the treatment of this painful malady. His first indications are to arrest the development of the series of symptoms constituting hemicrania—and to mitigate its accessions, (calmer ses accès.) It is at the moment of its commencement that the course of the malady is most easily checked. At this period all causes of excitation in the optic nerves and tissues should be removed. The patient is to be completely excluded from light and noise. This abduktion of all stimulus will sometimes induce early sleep, and check the paroxysm. It is at this early period that the application of belladonna has occasionally succeeded in preventing the pain. The author and his colleague, M. Trousseau, cause the remedy to be rubbed on the temples, with the greatest success. M. Piorry dilutes the belladonna with a little water so as to form a kind of syrup, which is rubbed on the palpebræ as well as on the temples. The author uses only a very small quantity of the remedy, from one to three or four grains. He avers that he hardly ever fails to check the paroxysm by this means. It is to be borne in mind that, on the succeeding day, after the application of the belladonna, the pupils will be greatly dilated, and vision disturbed. But this effect and inconvenience are only temporary. The author has not employed belladonna internally. He has used opium, but with very indifferent effects. M. Piorry observes that the march of hemicrania may often be arrested by raising excitement in the stomach, by means of stimulants, as wine, spices, food, &c. A very smart stimulation to the feet will sometimes have the same effect. In case of failure, each symptom can only be combated by the most probable means. Quietude and darkness—cold applied to the eye affected—vomiting by means of large ingurgitation of warm water, will mitigate the pain, and somewhat curtail the paroxysm.

The prevention of a return then becomes the great indication. The causes already enumerated, are to be avoided, and especially all exercise of the eye in reading during the operation of digestion. After this process is finished in the stomach, the patient need not fear to engage in study or other exercise. Exposure to a strong light, however, and sudden transition from a dark to an illuminated room are dangerous. Sometimes a local plethora predisposes to hemicrania, then abstraction of blood is proper. On the other hand, where the patient leads a sedentary life, and is debilitated, we ought to prescribe nourishing food, which is the best of all tonics. Great attention to the bowels is necessary, since constipation often renews the attack. It is remarkable that the author appears to have had but little experience of the efficacy of quinine in this complaint—and of arsenic he makes no mention at all. Yet these are the most potent of all remedies in the disease under consideration. We have met with the complaint very often—indeed, it is by no means unfrequent in this metropolis, among artists and others who lead a sedentary life, using the eye much, and the muscles of the body little. In these people, we have first cleared the bowels, and then given a sudorific at bed-time, with a good dose of colchicum and Batley's liquor opii sedativus. After this the quinine, arsenic, or both united, have seldom failed to put a sudden stop to the complaint. Quinine in small doses, for some weeks afterwards, is necessary to prevent relapses.

17. *Treatment of Chronic Rheumatism.*—Dr. A. T. THOMSON states, that in long, protracted cases of chronic rheumatism, when the pains are confined to particular joints, he has seen much benefit derived from a plan imitative of the Douche baths, at Aix-les-Bains. "On reading an account of these baths," he says, "which are of a temperature from 116° to 142° Fah. I was induced to form an opinion that the principle of their action was percussion in conjunction with a high temperature. The Douching apartments, which are caves of the rock, have the hot water conducted into them through channels, that terminate in tin-tubes of about two inches in diameter. A large stream of water falling from a considerable height is thus directed upon the affected part, whilst the

patient is immersed in an atmosphere of warm vapor. The sensation experienced resembles that of a severe cudgelling; but this is followed by decided relief, and the repetition of the douching, at intervals of two or three days, generally produces a permanent cure. To imitate these baths, I set my patient in a chair, at the side of which is placed a bucket or large vessel capable of containing three or four gallons of boiling water, and envelope patient and all with a blanket pinned close round his neck. In a few minutes he is bathed in a copious perspiration, and in this state he is directed to apply percussion to the pained joints by means of an elastic ball, made of cork covered with kid leather, and fixed on a handle of cane or whalebone about a foot in length. I have seen the most decided benefit follow this practice; and one case, of seven years' standing, after the daily employment of this *dry douching*, if such an expression be allowable, my patient was beaten into excellent health, and threw aside a crutch, which he had for years been forced to use.—*Lond. Med. Gaz. Nov. 1831.*

18. *Nephritic Colic*.—Dr. DUNLA relates in the *Osservatoire Med.* for July, 1831, two cases of nephritic colic relieved by frictions over the regions of the kidneys and ureters, with an ointment composed of fifteen grains of extract of belladonna and half an ounce of lard. Dr. D. resorted between the frictions to the warm bath.

19. *Hysteria*.—Professor CHIAPPA states, that enemata of iced water immediately dissipate the symptoms which characterize the hysteric paroxysm.—*Annali Universali*, July, 1831.

20. *Whooping-Cough*.—Dr. BLAUD recommends the sulphuret of potash as a remedy for whooping-cough. He gives it in doses of ten grains, morning and evening, mixed with a little honey. In six cases of adults in which he administered that remedy, the spasmodic cough, he says, ceased after the second dose, and the catarrhal cough disappeared after a few days.—*Revue Médicale*, August, 1831.

21. *Cephalalgia cured by the External Application of Cyanuret of Potassium*.—M. ANDRAL has employed the cyanuret of potassium with complete success in a case of most intense cephalalgia, which had resisted for ten months the most powerful remedies, (bleeding and seton in the neck, blisters and sinipisms.) The salt was employed in solution in the proportion of from six to eight grains to the ounce of distilled water, and compresses wet with this solution were applied for eight days to the forehead and temples.—*Gaz. Méd.*, Jan. 1832.

22. *Dropsy cured by Nitrous Oxide*.—In the *Annales de la Médecine Physiologique*, for August last, we find a letter from M. Van Roosbroeck, of Louvain, to M. Broussais, in which the former states, that having inhaled some nitrous oxide for the purpose of experiencing its effects, he was struck with the very active diuretic and sudorific action it induced, and he determined to try its effects in dropsy.

The first patient to whom M. Roosbroeck administered the remedy, was a man, in the hospital of Louvain, fifty-two years of age, who, for two years and a half, had suffered from ascites, which appeared to depend upon a disease of the heart, on account of the irregularity and intermittence of the pulse, and the obstructed respiration which had been present from the commencement of the disease. For two years all imaginable means had been tried to produce the absorption of the fluid effused in the abdomen. Finally, paracentesis was resorted to, but which, far from relieving the disease, seemed to augment its activity; for after each operation the fluid was more promptly produced, so that the seventh time, twenty-four hours after the operation, the abdomen was as tense, and fluctuation as manifest as before the operation. If paracentesis was longer delayed, the extremities and the face became speedily blue and in-

filtrated. The eight time that his abdomen was evacuated, atmospheric air was injected into the cavity, but without any effect. Seeing that the disease had for two years resisted all remedies, M. Roosbroeck determined to inject into the peritoneal cavity some nitrous oxide gas, after the fluid should be evacuated. He first ascertained, by an experiment upon a rabbit, that the action of that gas upon the peritoneum was not injurious. September 17th, 1830, after entirely evacuating the fluid from the abdomen, the quantity of gas produced by the decomposition of two drachms of nitrate of ammonia, was collected in a bladder, and injected into the abdomen through the cannula of the trocar. During the night the patient was warm, and sweated much, which had not happened to him before for two years; and he had besides passed as much urine as he usually did in four days; but he complained of some pain in the abdomen. From that period the patient's abdomen did not increase in size; it became even smaller than the day after the operation; he experienced no pain in it; the patient's pulse, however, continued irregular.

M. R. has tried the remedy in two other cases, but without such marked benefit; copious perspiration and urination were, however, induced by it. M. Broussais has also employed it at M. R.'s suggestion, but in a very unpromising case; no injurious effects, however, resulted from the introduction of the gas into the peritoneal cavity. The remedy seems to be worth a further trial.

23. *Case of Anasarca cured by Leeches to the Anus.*—The following interesting case was communicated to Professor Broussais by M. Roosbroeck. A man was admitted into the hospital of Louvain with his inferior extremities, scrotum, prepuce, and the lower portion of the abdominal parietes infiltrated. On examination, it was found that all the functions were in a normal condition; no other morbid symptom was discovered except the infiltration; the patient complained of no pain, and said that he never had the slightest symptom of disease. The infiltration appeared suddenly, first commencing in the prepuce. Frictions with squills and digitalis, blood-letting, and diuretic drinks were tried without effect. M. Donkelac, who had the patient under his care, suspecting, on account of the patient having habitually taken spirituous liquors, a chronic irritation of the alimentary canal, the symptoms of which were more or less concealed, ordered fifteen leeches to the anus. The day after the infiltration had much diminished; the same number of leeches were again applied, and the following day the whole of the effusion had disappeared; and the patient entirely recovered.—*Annales de la Médecine Physiologique, August, 1831.*

24. *Lead Colic.*—M. GENDRIN has instituted a number of experiments at the Hôtel-Dieu, to determine the best treatment for the colic from lead. He states that he has found the alum of commerce never to fail in a single instance to cure the disease in from three to five days, however intense it might be, and he has never observed it to be productive of any ill effects. He gives the remedy in solution in the dose of from one to three drachms daily. He has cured by this means fifty-eight patients. M. G. further states that the sulphuric acid, in the dose of a drachm to a drachm and a half daily, mixed with three or four pints of water, is equally efficacious, and perhaps more prompt in its effects than the alum. Both these articles have also been employed on the first indications of an attack of the disease for the purpose of warding off the disease, and with success.—*Transactions Médicales, January, 1832.*

25. *New Convulsive Disease of Children.*—There is in the *Gazette Médicale*, for January last, an interesting memoir by Dr. TONNELLE on a convulsive disease of children which has been long observed by M. Jadelot, the physician to the Hôpital des Enfants at Paris, and which he thinks has not been noticed by writers. This affection is essentially characterized by a very powerful contraction of the extremities, the leg and foot, or the forearm and hand. The muscles of those parts are rigid and tense; they are often distinctly marked beneath

the skin, and also prominent. From this convulsive state of the muscles there results a remarkable rigidity of the wrists and fingers. The former are slightly bent on the forearm, and the second slightly bent on the carpus, separated one from another, and requiring force to bend or straighten them. The disease is sometimes limited to the superior extremities, but most frequently it equally affects the inferior ones. In these latter the same phenomena are then observed as in the former, except that the feet are forcibly stretched on the leg instead of being bent. This contraction persists for several hours, days, or sometimes even for several years; then it ceases, and after some time reappears, and this may happen several times. The muscles of the other parts of the body are unaffected, as are also the intellectual faculties; the functions of the system are well executed; the pulse is sometimes accelerated during the exasperation, but most frequently it is natural, so that at first this disease might be taken for a malformation.

This disease does not appear to depend upon any appreciable alteration of the nervous system, in which it resembles many other nervous affections, as chorea, epilepsy, and clonic convulsions. It attacks young infants, and children approaching the age of puberty. It particularly affects those who are nervous or irritable, and appears to be sympathetically produced by the presence of worms in the alimentary canal; by dentition, or by some other disease, principally a gastro-intestinal affection. Finally, it sometimes appears in young girls on the first appearance of menstruation. It may terminate fatally; most frequently the result is favourable.

The treatment adopted by M. Jadelot consists of the use of tepid baths, cold affusions, to which he adds different antispasmodics, as camphor, or valerian, frictions with ether, or tincture of digitalis; mild laxatives, and some other analogous means, and usually with success. Sometimes the disease yields to the occurrence, in some degree critical, of the menses, and even in mild cases to the efforts of nature.

Ten cases of this affection are related by M. Tonnellé.

26. *Nocturnal Emissions of Semen*.—Professor BANG, of Copenhagen, strongly recommends for the cure of this affection the muriated tincture of iron.

Dr. Cless states that he has employed the cubebæ with advantage for the relief of that discharge.—*Nova Acta Regiæ Soc. Med. Havn.*

27. *Sulphur as a Preservative against Measles*.—Dr. TOURNAÏ, a Dutch physician, states, that at a period when measles were epidemic, all the children, who were under treatment with sulphur for it, escaped the disease; and that those who were taking sulphur for the cure of whooping-cough enjoyed the same immunity. Finally, he says that many children who were given a mixture of sulphur and camphor, and to whom these medicaments were applied by frictions, were not attacked with measles, whilst those who were not subjected to that medication were affected.—*Kleinert's Repertorium, and Gaz. Médicale, Jan. 1832.*

28. *Treatment of Intermittent Fevers by frictions with Quinine*.—Dr. SCHUSTER, of Münsterberg, states in a recent German Journal, that he has employed with success in the treatment of intermittent fevers, frictions to the epigastrium with a solution of sulphate of quinine in Hoffman's anodyne liquor, six grains of the former with a drachm of the latter. The frictions are employed three times a day. He has also employed with success in periodical fevers, a combination of six grains of the sulphate of quinine, a grain of tartar emetic, and two grains of opium, dissolved in spirit of camphor; this solution is also applied by friction to the epigastrium three times a day.—*Gazette Médicale and Rust's Magazin.*

29. *Leucorrhœa*.—Dr. KOPP, in a late number of *Hecker's Annalen*, recommends the following mode of treatment of leucorrhœa, which he says he has frequently employed with advantage. A piece of sponge of proper size, to fill

completely the vagina, is to be dipped into the following solution and introduced into that canal at night before going to bed. R. Decoct. ratanhia, ℥xij. extr. ratanhia, ℥ss; tinct. catechu. ℥iss; tinct. kino ℥iss. M.

Dr. Cless, in the *Archiv. für Medizin Erfahrung*, states that he cures almost all the cases of leucorrhœa that occur in his hospital at Stutgard with cubebs.—*Gaz. Méd. Jan.* 1832.

30. *Therapeutic effects of Croton Tiglium*.—M. ANDRAL having prescribed frictions with the oil of *croton tiglium* to the abdomen for the purpose of inducing evacuations from the bowels, perceived that the article produced active inflammation of the skin with a pustular eruption very similar to that of small-pox. Believing that advantage might be drawn from this in practice, M. A. applied the oil, in frictions, along the course of the sciatic nerve, in some cases of obstinate neuralgia and with complete success. From its powerful revulsion to the skin, he has found it to be productive of utility in laryngitis and chronic gastritis.—*Gazette Médicale, January, 1832.*

SURGERY.

31. *Tetanus*.—This is one of the most terrible complications of wounds. Its occurrence has been ascribed to various causes, none of them very satisfactory, and it is yet to be ascertained what are the causes which determine that disease. Dr. PAILLARD, in an interesting article in the *Journal Universel et Hebdomadaire*, for July last, after showing that the disease cannot with propriety be ascribed to the causes to which it is usually attributed, maintains the opinion that the exciting cause of the disease is almost always exposure of the wound or of the body to sudden reductions of temperature. M. Dupuytren, in a clinical lecture on a case of tetanus reported by Dr. P. dwelt strongly on the importance of that cause. M. Larrey entertains a similar opinion. In Egypt M. L. observed tetanus to follow frequently the slightest wounds; and the climate of that country, he says, is extremely variable; and he further remarks, that the disease was developed usually at seasons when the temperature is changeable; thus, it is more common in spring and autumn, than in summer or winter. In the campaign of Austria, in 1809, the wounded who were most exposed to the cold of the night in spring, after being subjected to the heat during the day, were almost all affected with tetanus. Four cases are related by Dr. P. in which the disease appears to have been excited by exposure to cold; in one of which only had the patient been wounded.

32. *Elephantiasis of the Scrotum*.—In September, 1820, Professor DELPECH successfully operated upon a patient affected with this disease in the surgical clinic of Montpellier. The scrotum was immensely enlarged, weighing after ablation sixty pounds; the testicles and penis were sound, and were preserved. Some notes of this case were communicated by the operator to Dr. Townsend, and published in the New York Medical and Physical Journal, Vol. I. 1822; and a full account of the case appeared in the *Clinique de Montpellier, Tom. II.*

In April, 1827, a similar and equally successful operation was performed by Dr. Wells, of Maracaybo, and an account of it was communicated to this Journal, and will be found in Vol. VII. p. 110.

Some attention has recently been attracted to this operation by the ill-success which has attended a recent attempt by Mr. Key to perform it on a poor Chinese, who visited London for the purpose of seeking relief from an immense elephantiasis of the scrotum and had excited considerable public sympathy. It was intended in this case to preserve the genital organs, but the depression of

* Not a Philadelphia Journal, as stated by Professor Delpech.

the patient became so great before the penis and testicles could be dissected out, that Sir Astley Cooper suggested that the genital organs should be sacrificed. The patient sunk under the operation, which lasted one hour and forty-four minutes. The tumour weighed sixty-five pounds.

Professor Delpech, in a letter to Sir Astley Cooper, published in a late number of the *Lancette Française*, censures the removal of the sexual organs in this case, and also in the operation performed by Dr. Ruan at St. Croix, West Indies.* (See this Journal, Vol. VI. p. 311.) The learned professor states that in the numerous cases which he has had the opportunity of studying, he has been able to satisfy himself that the sexual organs are generally healthy, and preserve their functions. He believes the disease to be seated in the reticular membrane of the skin, which becomes incurably altered by a kind of hypertrophy, and that the œdema and the surcharge of serosity are only symptoms of the obstruction of absorption by the diseased veins. In these cases the professor says that the diseased skin should be removed, but that the healthy genital organs ought never to be removed with it. As a general rule this must be admitted to be correct; and no surgeon should lose sight of the fact, that in the midst of the disorganized scrotum the testicles are usually to be found entirely sound.

33. *Lithotrity*.—About three years ago, M. Civiale had the gratification of relieving by this operation, the venerable Dubois from a vesical calculus; and he has during the past winter achieved another triumph in the cure of M. Lisfranc, the celebrated surgeon of La Pitié. The cure is complete. The fact of two such men as Dubois and Lisfranc submitting to the operation of lithotrity in preference to lithotomy is a sufficient answer to the clamours of those who deny the utility of the former. That operation must now be admitted among the established resources of the art. That it will supersede lithotomy in all cases is not to be maintained; but that it is preferable in some seems now pretty well determined.

34. *Case of Iliac Aneurism with Ligature of External Iliac Artery*.—The subject of this case is a man twenty-eight years of age, of good constitution; and the accident as far as the patient could judge was occasioned by a strain. The aneurism was situated above Poupart's ligament, which was raised by the lower part of the tumour, and by its indentation seemed to divide it in a large and small portion, the latter being below, the former above, occupying apparently, a space equal to the lower half of the external iliac artery, and being as large and as prominent as a good-sized orange; the pulsation very strong and distinct. During the month preceding the operation, the patient was bled three times, the pulse, however, remained generally above ninety and sharp. There was a slight bellows sound at the heart, but the arterial system in other respects appeared sound. The situation and size of the tumour preventing the usual operation from being attempted, and it being probable that the greater part of the external iliac, if not the whole, might be unsound, Mr. Guthrie decided on performing the operation, so as, if necessary, to place the ligature on the common trunk of the right iliac arteries.

Mr. Guthrie commenced the operation "by making an incision in the side of the abdomen, extending from about an inch within the ninth rib, and about one inch above the level of the umbilicus, to nearly an inch within the ileum. This incision was six inches long, and the integuments, superficial fascia, and the external oblique tendon, were divided as rapidly as possible, until the fibres of the internal oblique were fairly exposed, these, being of uncertain thickness, were next divided cautiously, until the tendinous expansion of the transversalis was brought into view, going to from the sheath of the ureters. The lower portion of this was muscular, but I divided the tendon immediately above this part very easily, introduced a director upwards and downwards, and cut the transversalis

* Not in the United States, as said by Professor Delpech.

upon it in both directions. The peritoneum was now exposed, covered, however, still by the fascia transversalis, which in places fastened and bound it down so firmly as to require to be divided with greater caution by the knife and director. This obstacle being removed, the peritoneum rose and fell with the intestines on each motion of the muscles of the belly, showing how carefully the preceding steps of the operation must be done to avoid doing it an injury, which at this part might be fatal. I now separated the peritoneum from the fascia transversalis and transversalis muscle, and endeavoured to pass my hand behind towards the spine, between the ribs and the ileum; but I found there was not quite room for it to pass easily: I therefore enlarged the incision as much downwards as the proximity of the aneurism would permit, and divided the transversalis tendon upwards for about half an inch more. As it was here very firmly passing across, I raised the part to be divided on my two forefingers, and desired an assistant to divide it with a pair of blunt scissors: in doing this, a small fold of peritoneum was caught and divided, to the extent of near a quarter of an inch. It was, however, out of the way, and my hand could now pass with perfect ease, although it required to be done with the greatest caution, raising and separating the peritoneum before it, and passing over the psoas muscle, until my forefinger rested on the common iliac. It was only at this part of the operation that assistance could be given by any one: Mr. WHITE now, however, took charge of the bag of peritoneum containing the intestines, and raised it and them sufficiently to enable me to see the point of my finger resting on the vessel and on the bone beneath. I could now feel, and indeed see, the common iliac and its bifurcation into the internal and external iliacs, and it was as easy to have placed a ligature on any one as on the other of these three arteries, and I more particularly on the common trunk. The external iliac appearing, however, to be sound, and of its natural size and appearance, an inch below the bifurcation, I cleared it with a blunt knife, and passed a ligature around it from within outwards, made of two strong threads of dentist's silk, well waxed. I then cut away one end, laid it straight, and allowed the peritoneum and intestines to fall back into their places. If I had a doubt about the soundness of the external iliac, I should have tied the common trunk; but as it was, and as I could with propriety place the ligature an inch below the bifurcation, I did it, and of course gave my patient an additional chance of escaping mortification.

"The wound was first brought together by three strong ligatures passed through the integuments, leaving the muscular wall to itself; and as these did not close the wound, four stitches through the skin, of a single thread each, were added in the interstices, which brought the edges of the whole line of incision into contact. The adhesive straps were then applied, and a compress was retained by other straps and a flannel roller. The legs were both raised by a pillow under the knees, the body bent, and the patient inclined towards the affected side.

"The temperature of the limb previously to the operation, on Saturday the 19th of November, was 102; the pulse ninety-two. On being put to bed, a hot bath was applied to the foot, and two persons were directed to rub the foot, leg, and thigh constantly under the bed-clothes, which they did until midnight. At eight p. m. the pulse was 106, the temperature ninety-two. At twelve on Sunday the pulsation of the femoral artery was distinguishable in the middle of the thigh, and he was free from pain in the limb, which I considered to be a most important sign of safety from mortification; for you may lay it down as a general rule, that, when a limb is going to mortify after such an operation, there is always great pain in the heel, calf, and even in the thigh, whilst at the same time there will be a mottled appearance of the skin, which together are the forerunners of an inevitable and generally fatal mortification. In the evening, the pulsation of the posterior tibial artery was just discoverable at the heel; and on the Monday, at forty-eight hours after the operation, I considered the danger of mortification to have passed by, and that of inflammation to have commenced. The pulse rose to 134, was jerking, but neither full nor hard. I had him bled to

nine ounces, when the pulse diminished in volume nearly three-fourths, and he felt himself relieved from an oppression he could not describe before. The abdomen was a little swelled and tympanitic, but not painful any where on a fair degree of pressure. An enema, with ol. ricini, was given, and repeated with ol. terebinth. with full effect. In the evening the pulse was 140, and very peculiar, there being seventy strong beats, and seventy short feebler ones following them; the countenance a little anxious. I had him bled, with my finger on the pulse, until twenty-two ounces were drawn, when he became faint, a profuse perspiration came over him, and the limb lost in temperature.

"I may say to you now, in regard to the abstraction of blood, that it was very desirable not to produce positive syncope, yet to go sufficiently near it to repress inflammatory action; for, if syncope had taken place, it is possible the limb might have been lost. I was guided by this in the different bleedings which he underwent during the eight subsequent days, until 107 ounces were taken away in all; the blood, until the last, being cupped and buffed, and firm in the coagulum.

"He was kept on four ounces of bread and tea only each day, for the first fortnight, and on eight ounces, with a pint of milk, for the second. The loss of blood was not sufficient, even with the starvation, to subdue inflammatory action, and he took colchicum and digitalis also, until the intermission of the pulse, on the 3d of December, warned me to desist from their use.

"The ligature came away on the twenty-eighth day. The violence of inflammatory action induced me to suspect a greater degree of inflammation in the coats of the artery than was compatible with safety; and the removal of the ligature gave me great satisfaction, in assuring me of the soundness of the upper portion: the lower one seems to have inflamed, and the tumour, it would appear, partook of it also; for, on the 13th of December, it was evidently softer, and increasing towards the line of incision, into which it discharged itself the next day, being thereby diminished in size. It still continues to discharge itself in a similar manner, but is so much diminished as to be scarcely perceptible, and I have every reason to hope will become consolidated with the surrounding parts.

"The man is now taking porter, fish, and beef tea; sleeps well; is free from uneasiness; and, as far as the operation goes, it has perfectly succeeded; and will form, I presume, a precedent likely to be followed in all similar cases.

"It is especially worthy of remark, that the peritoneum seems scarcely to have inflamed beyond that part necessary for the cure, and that even this was confined to the outside. It was the general inflammatory disposition which required a decisive treatment, and not the local, which never exceeded its due bounds. I have said, when writing on the operation for placing a ligature on the aorta, that it must be done in a similar manner; and when my finger was resting on the trunk of the iliacs, I felt confident that I could with ease have placed it on the aorta. I laid bare one inch of the vessel: many persons saw it at a distance in the theatre, and, as the vessel does not exceed two inches and a half in length in the person, it is plain that very little more required to be done. I have no doubt but a further extension of the external incision for an inch upwards would have given quite sufficient space to have tied the aorta with ease; and I attribute the success of the operation on Ilicks to the extent of the incision, which allowed of every step of the operation being done with facility."—*London Medical and Physical Journal*, January, 1832.

35. *Femoral Aneurism—Ligature of External Iliac.*—The subject of this case is a sailor, forty-four years of age, who on the 2d of April 1831, when at work at a ship's pump, suddenly felt a sensation in his left thigh "as if the limb had been taken off by a shot." This was followed in four or five days, by a swelling in the inner and anterior part of the thigh, about two inches below Poupart's ligament. The tumour increased in size, and on the 16th July, 1831, he was admitted into Guy's Hospital in the following condition. "A large pulsating tumour is situated below Poupart's ligament, towards the inner part of the thigh:

it is of an oval figure, the long axis extending in a horizontal direction, being rather broader from side to side than from above to below. The circumference of the tumour is solid; the central part is most prominent, and indicates fluid contents; it is tense, and can be considerably lessened in size by pressure: as it again enlarges, it extends in a direction upwards, so as to overlap Poupart's ligament. The skin is not discoloured over the tumour, but is traversed by large veins, which extend around the limb towards the hip. The whole limb is considerably swollen and enlarged; its temperature increased, the veins congested, and the leg œdematous. His health is much impaired: he has loss of strength, appetite, and latterly of sleep; pulse sixty-six, natural in its beat, countenance sallow, and expressive of suffering."

His bowels being previously cleared by aperients, on the 19th July, Mr. Bransby Cooper applied a ligature to the external iliac in the following manner; the patient being placed on a convenient table in a horizontal position, an incision was made, commencing half an inch above and to the outer side of the external abdominal ring, and extending outwards to within an inch of the anterior superior spinous process of the ileum, in a slightly crescentic direction, the convexity of which was downwards towards Poupart's ligament, and the concavity upwards towards the abdomen. The object to be obtained by this incision was to expose the tendon of the external oblique muscle, but in this case it was so covered with adeps that it required several incisions before it could be completely cleared. This done, by the next incision the tendon of the external oblique was divided precisely in a direction corresponding with the course of the first incision. This semilunar edge of the tendon of the external oblique was now lifted up by an assistant, in order to expose the internal ring; but, from the great development of the muscular fibres of the internal oblique, where they arise from Poupart's ligament, this object could not be effected, the ring being completely concealed by them: it was, therefore, necessary to pass a director underneath these muscular fibres, and separate them from their origin by means of a blunt-pointed bistoury.

The spermatic cord and internal ring were now exposed. The spermatic cord was then drawn upwards and inwards by an assistant; the forefinger of the right hand was passed into the internal ring, in order to separate the peritoneum from the iliac vessels, by pressing it upwards into the abdomen. The fascia which connects the iliac vein to the artery on the inner side was next separated, in order to make a free passage for the aneurismal needle, which was then passed from within outwards around the artery, armed with a silk ligature, of double the usual size.

The object in using a large ligature was to prevent a too quick separation before so large an artery is properly secured by the adhesions of its internal coat. From some experiments, Mr. C. has found that a very fine ligature will ulcerate a large vessel so quickly, that it will sometimes cause, and at all times lead to the danger of after-hæmorrhage.

Before the ligature was tightened, the artery was brought to view; a precaution which in this instance was particularly necessary, as a small branch of the external spermatic nerve was seen taking its course along the front of the vessel, and this had to be carefully separated, to prevent its being included in the ligature, which was afterwards tightened. The pulsation in the aneurism immediately ceased, and the size of the tumour lessened at least one-third: the edges of the wound were then brought together; one suture was employed to maintain their apposition, and the remainder was secured with adhesive plaster and a mass of lint. The operation lasted twelve minutes from the first incision to its conclusion.

The ligature came away the 22d day after the operation. Whilst convalescent the patient was attacked with a violent inflammation in his right testicle, which yielded to antiphlogistic treatment—he then had a similar attack of the left testicle without any apparent cause.

When the report of the case was made out by Mr. Cooper, the wound had

healed and the patient was considered to be in a perfect state of convalescence.
—*London Medical and Physical Journal*, January, 1832.

36. *Extirpation of a large Scirrhus Tumour in the situation of the right Parotid Gland.*—This operation has been performed by Dr. WILLIAM STEDMAN of St. Thomas, upon a negro boatman. The tumour was on the right side, and "extended from behind the concha of the external ear to an inch below the angle of the jaw-bone. Upon the upper part, the tip of the ear, and part of the cartilage of the concha, were imbedded in the tumour which extended on the forepart from a little below the malar bone to the upper portion of the thyroid cartilage. It dipped under the jaw-bone to the depth of nearly two inches. The following is the dimensions of the tumour:—four and a half inches in length from its attachment to the jaw, sixteen and a half inches in circumference at its thickest part; nine and a half inches from the base of the ear to the bottom of the tumour; ten and a half inches across the middle of the tumour from the back to the front part. The greater part was of a stony hardness; but there were two lobes on the top of the tumour which were softer, and over which the skin was thin, and of a reddish hue. These in a few days burst into ulceration giving issue to a thin and fetid humour.

"The disease according to the patient's own account, commenced about twelve years before at the angle of the jaw, and was at first about the size of a walnut. It had gradually increased, until within the last year, when its progress became much more rapid, until it had reached its present size. Within the last year it has occasioned him much pain, which has lately increased."

Dr. Stedman determined upon the extirpation of this tumour, and effected it on the 7th Sept. 1830. The first step of the operation was to apply a ligature to the carotid which was rendered embarrassing by a great flow of blood. The artery was however tied at a point about a line opposite to the middle of the thyroid cartilage.

The tumour was then extirpated in the following manner:—"an incision was made from behind the *concha* of the ear to the termination of the tumour in the neck. I next dissected the skin from the tumour until I had arrived near its base. An oval incision was then made on the front part of the tumour, extending from the front of the ear to the termination of the first incision. I was unable to save so much skin as I had wished, from its being tuberculated, and of a suspicious appearance. The tumour was dissected out cautiously on this side also. Notwithstanding the ligature of the common carotid artery, several arteries sprung in the course of the dissection, so that I had altogether to tie seven in this part of the operation. The tip of the ear, and the cartilage above, were now dissected out of the tumour, which was dissected alternately on each side, until it hung by a portion not thicker than the middle finger, deep under the angle of the jaw. Upon attempting to cut this, a considerable artery jetted out its blood. Drs. Hornbeck and Rayn having thrown two ligatures round this part, I boldly cut it away, and had the satisfaction to find that no hæmorrhage followed. A small lymphatic gland, about the size of a bean, being a little hard, was seized with the hook and extirpated. The whole of the space that had been occupied by the tumour was now carefully searched by the attendant physicians and myself, and no diseased portion could be detected. In the course of the dissection, I was obliged to cut away a part of the head of the sternomastoid muscle, as it was impossible to separate them.

"The wound that was exhibited after the removal of the tumour, including the one made for tying the carotid artery, extended from the mastoid process of the temporal bone to near the sternal extremity of the clavicle, and from the front part of the ears to deep under the jaw, near the angle of the mouth. The lips of the wound from the sternal extremity, to the angle where the two incisions round the tumour met below the jaw, were brought together by the interrupted suture.

"The upper wound, where the tumour was situate, could not be closed by

the skin, as a large portion had been cut off for its unsoundness. This space was therefore covered with adhesive strap, and allowed to granulate.

"Slips of adhesive plaster were put between the stitches on the wound on the neck, and the whole being covered with a layer of charpie, a loose roller was passed round the neck, and over the top of the head.

"The tumour on being removed was found to weigh one pound twelve ounces.

"The ligature of the carotid came away on the twenty-sixth day. Nothing remarkable occurred during the progress of the cure, which was accomplished by the 6th of October, and a year after the operation, the patient was in good health, and engaged in his old occupation of a boatman.

"Dr. Stedman agrees with Mr. Colles, of Dublin, in thinking that it is impossible to extirpate the parotid gland, and that those cases in which that organ was said to be extirpated, were nothing more than cases of diseased enlargement of lymphatic glands, whose increased volume had occupied the position of the parotid on the cheek, causing the absorption of that gland."—*Edinburgh Med. and Surg. Journ.* Jan. 1832.

37. *Excision of the Elbow-Joint.*—This operation has been performed by DAVID KERR, Esq. of Aberdeen, upon a boy sixteen years of age, who had a disease of the elbow-joint of ten months' standing. The patient was in a fair way of recovery.—*Ed. Med. and Surg. Journ.* Jan. 1832.

38. *Treatment of Burns.*—M. ROCHE has employed cold water as an application to burns, and has found it to calm promptly the excessive pain produced by these injuries. But when burns are very extensive it would be difficult to keep the patient constantly in cold water, and the prolonged application of that remedy would also be productive of considerable inconvenience. The pains, however, Mr. R. says, may in such cases be perfectly removed by the application, for two or three hours, of ice to the head. M. LOMBARD has been led to adopt this mode of treatment from the great advantages he has derived from it in neuralgia wherever they may be seated; and he employs it successfully to calm all intense pains.—*Transactions Médicale, August, 1831.*

39. *Rare Luxation of the Patella.*—DR. MARTIN has communicated to the Medical Society of Lyons an instance of luxation of the right patella, the inner edge of which bone was in contact with the anterior and middle portion of the articular surface of the femur, its external edge projecting anteriorly. It occurred in a young lady, fifteen years of age, whilst turning in her bed. Dr. M. reduced the luxation by flexing the thigh on the abdomen, and then seizing the patella with both hands, and drawing it outwards turned it back to its natural position. The patella in this subject were small, and the ligaments somewhat relaxed.*

Some surgeons have denied the possibility of such a luxation. Jean Sue, however, communicated to the Royal Academy of Surgery, in 1752, an instance of it, and another case is recorded by Dr. Wolff, in *Rust's Magazin*, for 1828. B. 27.†

40. *Displacement of the Tongue.*—In the *Collection des Thèses de la Faculté de Paris*, there is one by Dr. Sauvage, who endeavours to prove that displacement of the tongue is always caused by œdema, and may be cured by resolvent applications, or its forcible replacement. Professor Delpech, in a memoir on this subject in a late No. of the *Revue Médicale*, (November, 1831,) recommends compression as the most judicious means of curing this affection, and censures the ablation of a portion of the organ, which is usually resorted to for the relief of the patient. The Professor relates one case which he has suc-

* Archives Generales, June, 1831.

† Ibid, Vol. XX. p. 436.

cessfully treated by the former method. After the tongue had been reduced by compression to nearly its original size, so that it could be replaced in the mouth, M. D. found that the inferior molars had grown up so as to prevent the incisors from being approximated nearer than two inches. These molars were drawn out, the tongue replaced, the jaws were kept approximated by a bandage under the chin, and a complete cure appears to have been effected. M. D. ascribes this disease to the too great growth of the molar teeth, which produces a gradual depression of the lower maxillary bone, which, forming an inclined plane, the tongue gradually becomes displaced, and even falls out of the mouth; the stretching of its vessels, its unnatural position, &c. obstructs the circulation of blood through it, and thus produces œdema. This excessive growth of the molar teeth has been, we believe, observed in all cases, but we have hitherto ascribed it, and still believe it to be the result of the absence of pressure upon them by the jaws being kept apart by the enlargement of the tongue; and that this last is the cause of the former, and not the effect, as supposed by the Montpellier Professor.

41. *Torsion of Arteries*.—It is known to our readers, that the torsion of arteries has recently been proposed by M. Amussat, as a substitute for the ligature. Professor DELEZEN, of Montpellier, who is an advocate for union by the first intention, and who attaches a great value to whatever may secure the accomplishment of such union, has investigated experimentally the value of that hemostatic means, and has communicated the results to the public in the *Revue Médicale*, for Oct. 1831.

The first point to which the learned professor's researches were directed, was very naturally to determine the solidity and permanency of the obstacle to the flow of the blood, produced by torsion of the arteries. To arrive at this information, he instituted, in conjunction with Professor Dubreuil, a number of experiments upon the dead body. He adapted an injecting syringe, filled with water, to one of the vessels in the neighbourhood of the arterial trunk, which they wished to submit to experiment, so that the impulsion of the fluid might be perfectly exerted at the place of operation. He denuded the carotid, the brachial, the crural, and even the abdominal aorta itself, at different times; he divided these vessels whilst the vessels were filled with water, and whilst efforts to inject more, were still making; the effusion of fluid, when these vessels were cut, indeed, showed that these efforts were constant and forcible. The cut vessel was then seized with the finger, and afterwards with the torsion forceps, so as to arrest the flow; its tunics then contused by pressure with forceps, and torsion being effected, the vessel was left to itself, and not a drop of liquid escaped from it. This result, says the professor, appeared very remarkable to us, especially when the abdominal aorta was the vessel operated upon. The syringe was adapted to a carotid artery, and the arterial system entirely filled; under the continued pressure from the instrument, the aorta was laid bare, completely divided, which would have been followed by a flow of fluid, had not means been taken to prevent it. Contusion and torsion being executed, effusion was completely arrested.

Researches of the same nature were made upon living animals, as dogs, horses, mules, &c. and in none of these cases did any blood flow from the arteries, after contusion and torsion had been effected. The examination of some of these animals, killed a short time after the operation, showed that the contusion of the circumference of the vessels had ruptured its tunics; that the torsion had twisted, (*trillé*,) the cellular tissue beyond the place where the vessel was divided; the internal and fibrous tunics had been irregularly broken up, so as to project into the interior of the vessel; the pseudo-membranous and fibro-sanguineous clot formed a mass, entangled in the torn filaments of the arterial tunics, in the cavity of the vessel, prolonged as far as the neighbouring branch. Nothing, according to the professor, could be more solid; ligatures act only in the same manner; it was the effect of ligatures without any of their

disadvantages; and nothing remained but to test its efficiency by trials upon the living human subject; this Professor Delpèch has done in three cases, but with results entirely unfavourable. The first case was in an amputation of the thigh, the second, one of the leg, and the third, one of the humerus. In all three, hæmorrhage was arrested, but suppuration also occurred, which prevented union by the first intention; and the two first were attended with fatal results. On examination in the first case, the arteries were found inflamed, and in the second, there was suppuration within and around the vessels; in the third, there was also suppuration in the tract of the vessels, but a cure was ultimately effected. Professor Delpèch has been led from these results to the conclusion, that torsion inflicts greater injury to the vessels and their sheaths than the ligature, and that a substitute for the ligature is still a desiderata.

It should in justice to M. Amussat, however, be mentioned, that he attributes the suppuration and the unfavourable results in Professor Delpèch's cases, to the professor having employed *ligatures* to preserve the flaps in contact.

M. PRIOT relates in the *Journ. Univ. et Hebdom.* for Nov. last, six cases of amputation performed at l'Hôpital St. Louis, by M. Jobert, in which torsion of the arteries were performed, without succeeding, except in a single case, to arrest the hæmorrhage, and the surgeon was compelled to resort to the ligature. The experiments of M. Delpèch appear to us however pretty conclusive as to its efficacy in arresting hæmorrhage; the expediency of resorting to it is however a question, which would require much more experience than is at present possessed, to answer. It is a point of much interest, and would make an excellent subject for an experimental thesis.

M. Amussat has been awarded 6000 francs, (\$1200,) by the Institute of France for his application of torsion to arrest hæmorrhage.

42. *Reunion of Divided Parts.*—BARON LARREY in his highly interesting volume of Surgical Memoirs, of which a translation has recently been published by Messrs. Carey and Lea, relates the following remarkable case of extensive division of the face by the cut of a sabre, and which was successfully treated by him. A Russian Colonel, received from a French horseman "a stroke with a sabre, which cut off his nose at its base throughout its whole length. The instrument, being directed obliquely, had effected a division of the two canine regions, and two lateral parts of the upper lip, extending into the substance of the two maxillary bones on a level with the nasal fossæ. This division was bounded by the palatine arch, which formed a part of the flap, turned over upon the chin, and remaining adherent to the living parts of the face, merely by two small shreds of the upper lip, forming the commissures of the mouth. The entire extent of the nasal fossæ and the cavity of the mouth, without the alveolar arch, were seen on one side, and on the other, the flap formed by the whole of the nose, the upper lip, and the palatine vault, hanging over the chin. One of my pupils, finding this flap cold, and attached to the other portions of the face only at the two points, of which we have spoken, was proceeding to detach it entirely and dress the wound, according to the indications it presented, when I arrived at the bedside of the patient. I laid aside the scissors of the surgeon, and after examining the wound, arranged every thing, for the purpose of employing the suture. I had some difficulty in removing the clots of blood, which filled the nasal fossæ, and had been made hard by dust. I then detached the portion of the palatine vault, which adhered to the flap. It consisted of the anterior half of the superior alveolar arch. It had been separated from the remainder of the maxilla, on one side, between the canine and first molar, and on the other between the first two molar teeth. I also detached from the flap, several pieces of the proper bones of the nose, and ascending processes of the maxillary bones. The nose and lip were placed in their relative position, and I proceeded to reunite them with the surrounding parts, by the interrupted suture, commencing at the root of the nose, and descending successively on its sides, the edges of which were approximated by ten parallel points of the suture. A piece of fine linen dipped in salt water, was applied

over the whole extent of the triangle, which was formed by the wound. I introduced into the nostrils two portions of large gum elastic sounds, for the purpose of preserving their form and diameter. They were commanded on the exterior by means of a thread, which I inserted into their anterior extremities. Graduated compresses were placed on the side of the nose, and a retentive bandage terminated the dressings. I had the satisfaction to learn, on my return from Moscow, that this superior officer had perfectly recovered without any deformity. The cure of this case is remarkable, on account of the seriousness of the wound, and the few vessels which kept up a communication between the flap, and the integuments of the face. Vitality was restored to the nose, and its reünion with the edges of the wound was exact and perfect."

MEDICAL JURISPRUDENCE.

43. *On the influence of Opium-eating on Health and Longevity.*—A recent trial at Edinburgh, arising from the refusal of a life insurance company to pay a certain sum, which they had insured on the life of Lord Mar, on the ground principally, that the insured was in the regular practice of using laudanum to excess at the time he effected the insurance, has elicited from Dr. Christison some interesting remarks in our cotemporary, the *Edinburgh Medical and Surgical Journal*, for Jan. last, on the question, whether the habit of opium-eating is detrimental to health and longevity? In the trial referred to, several physicians were examined, who all considered the habit very injurious; but few special facts were known to the witnesses, and these few rather countenanced the supposition, that a fair proportion of opium-eaters reach an advanced age.

"It does not necessarily follow," says Dr. Christison, "that the habitual use of narcotics must tend to shorten life. The practice of snuffing, smoking, or chewing tobacco, is not believed to have any such effect. It is true, that the much more injurious and more permanent effects, which every repetition of a dose of opium produces on the digestive organs and on the nervous system, supply a stronger presumption of ultimate injury to life in the case of that drug, than exists in the instance of tobacco. But even these circumstances must not be too easily assumed as sufficient grounds for the belief that the practice of using opium in excess tends to shorten life. For it is well-known, that some disturbed states of the nervous system, such as hysteria, may exist for a long time, and that the functions of digestion may often be long and seriously disturbed by ordinary stomach complaints, without life being materially shortened. It is necessary then to appeal to special facts.

"I have not been able to find any facts of the least value on the subject in medical records. The following cases, however, have been communicated to me by several of my friends, in whose information I can place reliance.—1. A young lady of five-and-twenty has taken it largely for fifteen years. It was first administered secretly by her nurse to keep her quiet and save trouble; and the unhappy lady was subsequently compelled to keep up the practice for her comfort. She enjoys good health.—2. A female, a patient of mine in the Infirmary, a martyr to rheumatism, took it for ten years previous to her fortieth year, in the quantity of a drachm daily of solid opium. She then gave it up. Six months afterwards she was attacked with jaundice; subsequently she was several times severely ill of rheumatism; and she died in her forty-third year of consumption. This woman, however, led a licentious life from an early period.—3. A well-known literary gentleman, who has taken laudanum with some intermissions, for twenty years, and occasionally to the extent of nine or ten ounces daily, has now attained his forty-fifth year. He is spare in form, looks older than he is, but is capable of undergoing a good deal of bodily fatigue, and enjoys tolerably good health so long as he takes sufficient exercise. His allowance, when I had last an opportunity of conversing with him, was about nine drachms of laudanum daily.—4. A lady in this city, after drinking laudanum to

excess for upwards of twenty years, died about the age of fifty. No information could be supplied of the disease of which she died.—5. A lady of the same age takes about three ounces daily, and has used it for many years. She appears to enjoy good health.—6. A lady, about sixty years of age, has taken it above twenty years, and is in good health.—7. A charwoman, who had been in the daily practice of drinking two ounces of laudanum for many years, died at the age of sixty. The gentleman who has stated this fact, does not remember what disease she died of, although he dissected the dead body.—8. An eminent literary gentleman, I am informed, has been in the habit of taking laudanum since he was fifteen; and his daily allowance has sometimes been a quart bottle, (twenty-six ounces,) consisting of three parts of laudanum and one of alcohol. Enormous as this dose may appear, I am assured the fact is well-known to his acquaintances. He is about sixty years of age, and enjoys good health.—9. A lady of seventy, now alive, has taken about half an ounce of laudanum daily, for nearly forty years. She enjoys tolerable health, and every year travels great distances to visit her friends.—10. An old woman of eighty died a few years ago at Leith, after taking about half an ounce of laudanum daily for nearly forty years; and she enjoyed tolerable health all the time.

“These cases undoubtedly show that a certain number of opium-eaters may attain a good old age. But this circumstance will no more justify the conclusion, that a fair proportion of them do so, than the parallel fact, that drunkards often attain old age would bear out the conclusion that drunkenness is, on the whole, not inimical to longevity. The probability is, that many persons die at an early age of the effects of opium-eating, whose habits are never heard of, simply from the circumstance that they die young, before their secret is detected. The cases now succinctly related, then, are given rather with the hope of inciting others who have better opportunities to make further inquiries, than of conveying practically useful information. And I fully anticipate the result, that this habit will be eventually found not less destructive than the vice of drinking spirits. I cannot bring myself to think, that the habitual use of a drug, which produces such permanent narcotic effects as opium, disorders subsequently the digestive functions in so great a degree, leaves those who use it habitually in so miserable a state during the intervals of using it, as appears from their own confession, and leads obviously to emaciation and a worn-out elderly appearance at an early period of life, can be consistent in general with the enjoyment of health, and the chance of an average prolongation of the term of human life.

“It was remarked above, that very erroneous notions are entertained by most unprofessional and many medical persons, of the immediate effects of a dose of opium on those who use it habitually. These notions appear to be derived from the statements of eastern travellers, who have, in all probability, given an exaggerated view of the facts. It is in consequence supposed that in general much excitement is in the first instance produced, in the midst of which, every individual yields himself up to extravagant acts and expressions, corresponding with his ruling passion. Whether these statements be correct or false, I am at all events convinced, from the inquiries I have made on the subject, that such effects must be extremely rare in this country. According to the information communicated to me from various quarters, and confirmed by what I have myself witnessed, the state of the opium-eater, while under his dose, is often not at all different from that of an ordinary person of active habits, cheerful disposition, and liveliness of ideas. From what I have myself witnessed, I am quite prepared to believe that in many instances, when the opium-eater is under the influence of the drug, no one could possibly have any suspicion of the fact. This is abundantly shown by the facility with which the habit may be long kept secret. In case sixth, the lady's medical attendant was so completely ignorant of the habit existing, that, on being summoned to her, and on account of an attack of diarrhoea, he ordered an ordinary dose of opium, and was first warned of the true state of matters by the apothecary, to whom the prescription was taken, and who had supplied the drug for her daily use. In case ninth, I have

taken some pains to ascertain the fact, that some of the lady's most intimate friends are not at all aware of her having fallen into the habit. In case third I can state from personal observation, that even after being told of the habit existing, no one could discover it from the gentleman's appearance, conversation, or acts. I am further inclined to think, that in many persons unaccustomed to use opium, this drug, when it does not induce sleep or produce disagreeable idiosyncratic effects, occasions tranquillity and brilliancy of ideas; and that such effects will be often experienced, when its soporific influence is resisted by an exertion of the will. In all such instances, and notoriously in all opium-eaters, the stage of elevation is followed by one of gloom, depression, and loss of appetite. But the opium-eater usually takes care not to be seen at that time; and if he is compelled to appear in society, he alters the face of matters by renewing his dose."

It is further observed by Dr. Christison as the result of his inquiries, "that a considerable proportion of persons addicted to the use of opium, contrary to what would be expected, from its well-known influence on the intestines, require little laxative medicine, and some scarcely any at all. The subject of case third merely requires a little rhubarb on an average once a week, as he finds that exercise counteracts any constipating effect the opium may have. The subject of case fifth requires no laxatives. The charwoman, case seventh, got no laxatives in the shop where she got her laudanum. Case ninth, on the contrary, is an instance of the necessity of constant laxatives; and probably this is the more general rule, although it is obvious there must be many exceptions."

44. *Physiological Effects of various poisons not previously examined.*—The experiments we are about to relate, which are in many respects interesting, have been lately performed by Professor Hünefeld of Greifswalde. The substances experimented on were manganic acid, carbazotic acid, cyanous acid, cyanogen, and phosphorous acid.

Manganic acid is the acid which forms with potass the solution familiarly known by the name of mineral chameleon. Professor Gmelin of Tübingen ascertained, not long ago, the effects of the salts of manganese on the animal body, and arrived at the singular result, that where the sulphate is injected into the veins, it produces an extraordinary increase of the biliary secretion, and an inflammatory state of the liver. Professor Hünefeld has found, that analogous effects are produced by the manganic acid on the liver, but that it is a very feeble poison, if indeed it can be properly called a poison at all. He gave a rabbit from ten to fifteen grains several times a-day, till in three days it had taken nearly two drachms; but no effect was remarked, except slight increase in the secretion of urine. The animal being then killed, the peritoneum was found coloured grayish-green, the great intestines of a similar colour, the stomach and small intestines natural, the lungs, heart, and kidneys natural, except that the heart, as well as the voluntary muscles, were rather more easily torn than usual. The outer lobe of the liver was partly bright red, partly deep brownish-red, and at some points of the colour of boiled liver, and easily indented. When the liver was incinerated, the ashes gave unequivocal indications of the presence of manganese. In the other organs, and in the blood, no such indications were to be found.

Carbazotic acid is procured during the action of nitric acid on indigo, and derives its name from its composition, as it is a compound of carbon, azote and oxygen. Professor Hünefeld has found, that dogs and rabbits sustain no harm from doses of fifteen, twenty, and even thirty grains; and he consequently concludes that it is not poisonous.

Cyanous acid appears to be not poisonous. A rabbit got first five and then twenty grains of the cyanite of potass, without any appearance of suffering. Twenty grains of the same salt decomposed by phosphoric acid had also no effect whatever. And in like manner, when the same quantity, decomposed by the supertartrate of potass, was administered, no perceptible effect ensued. This substance, therefore, appears in relation to its operation on the animal

body to belong to the same class as the sulpho-cyanic and ferro-cyanic acids, which are either not poisonous at all, or very feebly so, and differ in that respect most materially from cyanogen itself, and its other well known compounds.

Cyanogen.—Professor Hünefeld conceives that no experiments have yet been made on the physiological properties of this gas. But here he is mistaken. *Coullon* ascertained some time ago that it is very poisonous to all the lower animals, in whom it produces sometimes pure coma, sometimes convulsions also, (*Journ. Universel. des Sc. Méd.* ii. 240;) and *Drs. Turner* and *Christison* ascertained, that in very minute quantity it acts powerfully as a narcotic on plants, (*Edin. Med. and Surg. Journal*, xxviii. 363.) The experiments of Hünefeld are confirmatory of the results now mentioned. He placed a rabbit in a pneumatic trough, into the bottom of which the gas was introduced, while the top was covered by pasteboard. In a few minutes it became restless, and breathed anxiously; in four or five minutes slight convulsions supervened, feces were discharged, the tongue was protruded, the eyes became stiff, and the pupils dilated; and the animal threw back its head and appeared stupefied. In the course of five or six minutes it uttered some cries and expired. Being then removed into the open air, it was found impossible to effect resuscitation. When the body was examined, the eyes were found unusually glistening, the muscles flaccid, the abdomen distended and tense, the stomach, intestines, liver, heart, and lungs healthy, the brain healthy, and not gorged; and there was not any perceptible odour of cyanogen gas.

Phosphorous acid.—Twenty-five grains of this substance carefully prepared were administered to an adult rabbit. For an hour it appeared a little restless, and would not eat, but soon afterwards it became apparently quite well. In twenty-four hours a drachm was given diluted with a little water; after which the breathing became speedily difficult, and in the course of fifteen or thirty minutes the animal was restless and anxious, yet averse to motion. In ten or twelve hours it vomited a sanguinolent fluid, and then expired in slight convulsions. The villous coat of the stomach was brownish-red near the cardia alone. There was very little phosphorous acid in its cavity; but its contents had a strong acid reaction, owing to the presence of muriatic acid. The abdomen and other bowels were quite healthy, as also the liver and bile, which did not contain any of the poison. The lungs and heart were gorged with blood, the spleen also gorged and very red, the brain natural, the kidneys natural, and without acid reaction. Nowhere was there any smell of phosphorus. The urine was strongly impregnated with phosphoric acid, as appeared from the action of ammonia and sulphate of magnesia. The uterus was very red, and in the vagina a bloody fluid was found. Hence, this substance appears not to be a very active poison, and to operate not so much by irritating the alimentary canal as by inducing some remote effects. It is not improbable that it possesses the special property of irritating the uterine system.—*Ed. Med. and Surg. Journ. from Horn's Archiv. für Medizinische Erfahrung*, Sept. and Oct. 1831.

CHEMISTRY.

45. *Crystallization of Perchloric Acid*.—M. *SZKULLAS* states that the perchloric acid may be always crystallized by pursuing the following plan. Sulphuric and perchloric acid are to be successively introduced into a small retort, through a long tube; the beak of the retort is to be inserted into a tube curved and drawn to a fine point at the other extremity. Heat is to be applied, and when the liquid boils, and is kept in this state for some time, over a small fire, it will be seen to pass over into the tube and solidify there; the tube is to be kept cool with water; thick white fumes escape at the small end of it. The operation must be stopped before the mixture is discoloured, and as soon as any liquid passes over, which does not congeal. The experiment should always be performed with small quantities of the perchloric acid, say eight to ten drachms.

Liquid perchloric acid may be concentrated by evaporation in a capsule, or what is better, in a small retort. The first portions that pass over are to be thrown away, as they are only water. M. Serullas has obtained it of the density of 1.65.—*Journ. de Chim. Med. and Journ. Phil. Col. Pharmacy, 1832.*

46. *Hydrocyanic Acid*.—M. TILLOX has succeeded in preparing a medicinal hydrocyanic acid, the effects of which do not vary, and which can be preserved for several years, without any sensible alteration; this is

Cyanide of mercury	-	-	-	-	-	1 part,
Distilled water	-	-	-	-	-	4 parts,
Alcohol at 36° Baume	-	-	-	-	-	4 parts.

Dissolve the cyanide of mercury in the water, by aid of heat, and then mix it with the alcohol; add a very slight excess of hydro-sulphuric acid; throw in subcarbonate of lead; agitate several times, and distil in a water bath, so as to obtain all the alcohol saturated with the hydrocyanic acid.—*Ibid.*

47. *Cyanide of Potassium*.—According to M. CHEVALIER no work hitherto published contains an exact process for obtaining the cyanide of potash in a pure state. The usual plan is to calcine the ferro-hydrocyanate of potassa, then to dissolve it in distilled water, filter and evaporate to dryness. The procedure is impracticable, for the cyanide of potassa decomposes water on coming in contact with it. The result, therefore, would be hydrocyanate of potassa, and in heating this all the hydrocyanic acid escapes, and the residue will be merely potassa.

I have prepared this salt by calcining the ferro-hydrocyanate of potassa, then separating the cyanide of potassa from the quadricarburet of iron by pure alcohol, on distilling which, cyanide of potassa is obtained very pure and white.—*Ibid.*

48. *Perchloric Acid as a test for the Mineral Alkalies*.—From a paper on this subject by M. Serullas, it appears, that if a few drops of perchloric acid be added to a solution of potash and soda, a precipitate of perchlorate of potash is instantly formed, the perchlorate of soda, or the soda, if there be not an excess of acid used, remains in solution, whence they can be separated by concentrated alcohol, which, at the same time precipitates the small quantity of perchlorate of potash held in solution. A solution of perchlorate of soda, on the addition of potash, lets fall a precipitate of perchlorate of potash. When perchloric acid is added to solutions of the sulphate, nitrate, hydrochlorate, bromate, hydrobromate or hydriodate of potash, it forms a precipitate and the acids become free, and may be separated by means of concentrated alcohol. From these experiments it appears, that the perchloric acid forms an almost insoluble salt with potash, requiring to dissolve it more than sixty times its weight of water at 15 + 0. 2. That soda forms a very deliquescent salt, exceedingly soluble in water and concentrated alcohol. 3. That the perchlorate of potash, on the contrary, is insoluble in alcohol. Finally, that by means of perchloric acid, the salts of potash may be decomposed, and the acid separated.—*Ibid.*

49. *Protoxide of Copper*.—The most simple and easy mode of obtaining the protoxide of copper in a pure state, is the following. The copper is to be dissolved in hydrochloric acid, to which are to be gradually added small portions of nitric acid; the solution is then to be evaporated to dryness, and the residuum heated to fusion; it is thus transformed into a brown crystalline chloride. It is now to be melted with anhydrous carbonate of soda, in the proportion of ten parts of the former to six of the latter, in a covered crucible and at a low red heat. The mass is to be treated with water to dissolve the chloride of sodium that has formed; the protoxide of copper separates in the form of a beautiful red powder, which is to be washed and dried. If sal ammoniac be added to the above mentioned mixture, the whole chloride is reduced, as may readily be supposed, and separates in a spongy form, when the mass is mingled with water.—*Ibid.*

AMERICAN INTELLIGENCE.

An account of the Cholera which occurred on board the United States' ship John Adams. By G. R. B. HORNER, M. D. Surgeon. (Communicated in a letter to Professor Horner.)—So great is the terror this disease has excited, and such the eagerness with which the members of the medical profession are seeking for a precise knowledge of its nature and the best method of treatment, that I presume any communication which may increase their knowledge of either subject will be acceptable.

Before commencing the description of cholera as it prevailed among the crew of this ship, or speaking of the treatment adopted, it will be useful perhaps to say something respecting the health of the crew previously to its appearance, the localities of the ship during its existence, the state of the weather before its occurrence, and the measures taken to prevent its extension, and to render its attacks less violent.

The health of the crew from the time of our leaving the United States to that of our arrival at Constantinople, may be said to have been excellent. The only complaint at all common was diarrhœa, which was caused by bad water, but of which few cases occurred for a month before the vessel arrived. Four cases of ordinary cholera occurred in June and July, and yielded readily to the medicines commonly given.

On the 10th of August, 1831, the John Adams, after a detention of several days by a contrary wind, in the Dardanelles, arrived at Constantinople, and anchored in the Propontis, or sea of Marmora, about half a mile from the wall of the city, and to the south of Seraglio point. The sultan having refused us permission to anchor in the harbour or above the seraglio in the Bosphorus, we did not change the place of anchorage during our stay.

From the 1st to the 11th of August, the temperature of the air at noon averaged 80° of Fahr. The wind blew from the 11th to the 20th uninterruptedly, as it commonly does on the Bosphorus during the summer from the north. On the 11th, the temperature of the air was 70°, and from the 11th to the 20th, it averaged 76°. During the 20th and 21st, the wind was very light; the mercury stood at 81°. On the 22d there was a perfect calm; the Propontis was perfectly unruffled, the mercury stood at 83°, the atmosphere was loaded with a vapour impenetrable to the rays of the sun, and there was a general complaint on board of an uncommon relaxation of the body and of strange sensations of oppression. At noon on the 23d, the temperature of the air was 78°, but in the afternoon the wind having began again to blow from the north, the mercury sunk rapidly, and at 9 o'clock in the evening stood at 70°.

During the night of the 12th, and the morning of the 13th, three persons were seized with cholera, but the symptoms not being very violent, and the vessel having been only three days at Constantinople, I did not suspect they were affected with the cholera which I understood was epidemic there, and in the towns of Pera and Scutari. Between the 13th and the 23d, a number of cases of diarrhœa occurred; only two or three of those having it were taken under treatment, some being slightly affected and others not applying for assistance. Before day-light on the 23d, two persons were seized with cholera, and a third one shortly after eating breakfast. Of these, two died, one within eighteen, the other within twenty-one hours from the commencement of the attack. During the morning of the 24th, the master at arms, a young man, and previously in the enjoyment of perfect health, having expired within nine hours from the time of being attacked, and eight other persons having been taken

under treatment during a few hours, terror seized all on board, and the ship getting under sail dropped down to Point Stephano, ten miles from the city. The accounts of the ship having been settled, on the 25th she ran the length of the Propontis, entered the Dardanelles by night, and keeping on her course, the next day reached Mytelene. In the afternoon of the 27th, she came to anchor off Long or English Island, in the gulf of Smyrna. This island we understood from one of the sailors was uninhabited, and had an ancient building upon it in a sufficient state of preservation to be used as a hospital. As soon as the anchor was cast I went on shore in search of the building, and was much pleased to find it in every respect suited for the reception of the sick; it being large enough to accommodate double their number, and affording perfect protection from rain and dew, also permitting a free circulation of air. This building appears to have been used as a reservoir for water. It is composed of arches, supported by square pillars of granite, arranged in five rows, each of which, when it was perfect, consisted of twenty. Arrangements for their reception having been made, on the 28th all the sick were sent to the hospital. Their number was twenty-two. Four persons died between that time and the 29th. Convinced by the daily increase of the number of sick, that the disease would continue to progress and would extend throughout the crew unless some means were taken to check it, I recommended that all exposure to the dew should be avoided, that no more labour should be required of the men than was absolutely necessary, and that the rations of salt meat and beans should be stopped, and rations of fresh meat, rice, and potatoes substituted. Having understood that cases of diarrhœa were very common, I requested that all those affected with it should immediately report themselves, inasmuch as nearly all the cases of cholera had been ushered in by it, and the persons who had applied for medical aid as soon as they felt unwell, had the disease in a mild form, and had been cured or relieved without difficulty. The sailors, from foolhardiness or the fear of losing their grog by being on the sick list, notwithstanding this request and information, kept back until some of them were attacked with cholera and had died. They then being alarmed, reported themselves, and in a few days twenty-six were admitted on the sick list.

What I recommended was observed, and seemed to have the desired effect, for no more cases of the disease happened after the 9th of September; most of those who had it convalesced rapidly, and their number was so much reduced by the 15th, that the hospital was deserted, all of them were taken on board, the vessel went up to Vourla, and having got a supply of water, sailed for Port Mahon.

Having made this long preamble I will go on to describe the disease, and to speak of the treatment.

Symptoms.—These were most commonly nausea, burning pain, and great oppression in the epigastric region, copious vomiting, attended with violent spasms of the abdominal muscles, sensations of internal heat, a clean moist tongue, unquenchable thirst, frequent watery stools of a light brown colour, resembling muddy water, or a mixture of clay and water, and severe cramps of the lower extremities. In the mild cases the pulse was frequent and tense before vomiting, small and weak during its continuance, and after its subsidence full and soft. In three cases, the skin, before and after vomiting, had its usual plumpness and warmth. The evacuations did not always commence the attack. In one case the first symptoms were nervous twitches of the facial muscles, and acute pains darting through the thorax and abdomen. Another patient for four or five hours before vomiting and purging came on, had unremitting cramps of the legs, a haggard countenance, a frequent and feeble pulse, a cold skin, and a profuse clammy sweat. The first symptoms a third person had, were general uneasiness, and spasms of the biceps flexor cubiti muscle of the left arm, and of the hamstring muscles of the right thigh. The first symptoms in two other cases were violent and universal convulsions, similar to those of epilepsy; the patients remaining in a state of insensibility, gnashing and gritting the teeth,

and tossing themselves about with such force that several persons were required to hold them.

In the most violent cases, the common symptoms were an entire suppression of urine and saliva, a complete loss of muscular power and mental energy, anxiety, restlessness, hurried respiration, hiccough, vomiting, involuntary discharges from the bowels of the stools spoken of, spasms of the lower extremities, a death-like coldness of the hands and feet, and a small, feeble, and fluttering pulse. The skin was cold, lividly pale, bathed with a clammy sweat, and resembled the skin of a human subject which had been immersed in water for some days. The countenance was collapsed and unmeaning, the lips pale, the eyes surrounded by a bluish circle, glazed, and sunk to the bottom of their orbits. In two cases *subtus tendinum* continued for some time after death. It was common for several hours before death, for vomiting to cease, the stomach to retain whatever was given to drink, and spasms altogether to subside, the patients complaining of no pain.

The disease in most cases of recovery terminated as it began, with a diarrhoea, the stools of which were watery or slimy, and of a white or light brown colour, for a few days. When they had assumed their natural colour and consistence, convalescence was rapid and recovery certain.

Relapses were frequent, the alimentary canal for many days after the attack continuing irritable, and rendering it necessary to give food the most easily digested.

The cold livid skin, the clammy sweats, the small, feeble, fluttering pulse, the sunk and glazed eyes were the most fatal omens, the sure harbingers of a speedy death. Not a man who had all these symptoms recovered; and I finally when they existed, lost all hope of a cure. In these cases the system was unsusceptible of any salutary impression from medicines or remedies, and they scarcely retarded the extinction of the vital spark.

Post mortem examinations.—The appearances on dissection not having been the same in all persons, it will be better I think to give a separate account of each examination. I regret that from some of those who died, having been buried at sea, and my time having been so much occupied in attendance on the sick, that I have only five examinations to relate. For want of time also I was unable to make the dissections more general.

CASE I.—W. B. died at 4 o'clock, and was examined at 10 o'clock, A. M. The bladder was empty, the peritoneum, kidneys, spleen, and pancreas were in a healthy condition. The liver was of a natural colour and size, but the gall-bladder was distended by a very dark and thick bile. In the stomach and intestines was found a quantity of fluid almost white, not in the least tinged with bile, and having the appearance of rice water and mucus mixed. The mucous coat of the stomach, duodenum, jejunum, and ilium, was of a deep red colour, firm, and did not change in colour when scraped with the knife. The cæcum and colon externally were of a dark brown colour. The mucous coat of the latter was of a deep red hue, and its arch in the middle was so contracted, that when cut transversely, I found the feces retained in the portion next the cæcum. The size of the gut at the part constricted was that of my little finger. The mucous coat of the rectum was of a bright red colour, and had completely the inflammatory character, and not the congestive.

CASE II.—J. A. died on the fourth day of his illness. He had been long subject to attacks of intermittent fever, and last year was treated in the West Indies for hepatitis. These facts are stated to explain the peculiarities met with on dissection. The lymphatic glands of the mesentery were much enlarged; the liver of a light brown or yellowish colour, indurated and torn with difficulty. The acini were very indistinct, and the superior convex surface was covered with white spots. The gall-bladder was filled with a thin dark bile, and the stomach was congested with blood. The same kind of feces were found in the intestines as in the preceding case, having the same fluidity and colour. The small intestines were much contracted. Their mucous coat was congested

with dark blood, and the glands of Bruner were of a white colour, enlarged and indurated, rolling between the fingers like shot. There was no unnatural appearance in the colon, and the cæcum had its mucous coat only congested in patches, a few lines in circumference.

CASE III.—J. S. died within twenty-four hours after vomiting began. He had had before that took place a bowel complaint for two days. The lining membrane of the stomach presented some marks of engorgement of its blood-vessels, but that of the intestines was uncommonly pale. The liver was congested with venous blood, and the gall-bladder distended with bile. No bile was found in the stomach and intestines. The spleen, pancreas, kidneys, and bladder, were healthy.

CASE IV.—J. H. æt. 50, had been much addicted to drink. The mucous coat of the stomach was of a dark red colour, softened, very thin, easily to be separated from the cellular coat. Its folds were small and in parts hardly perceptible. The pylorus was scirrhus, and the mucous coat of the duodenum for five inches adjoining, had rather a bright red colour, and did not look like that caused by venous congestion. The remainder of the alimentary canal was pallid and flabby. The liver, spleen, and pancreas, presented no signs of disease.

CASE V.—L. V. æt. 18. The omentum majus, the mesenterics, the stomach and small intestines, were gorged with blood, which had more brilliancy than that of venous blood. Several spots of congestion were found in the cæcum, but the colon and rectum were perfectly pale. The arch of the colon presented its convexity downwards, and had the extremities near together. The liver, spleen, and other viscera, were healthy in appearance. In the alimentary canal, as in the others examined, the white fluid mentioned was found.

Treatment.—The state of the system not having been the same in all cases, the treatment was varied, and underwent certain modifications. Those patients who were slightly affected, were given, to correct nausea and prevent the occurrence of vomiting, small doses of sup. carb. soda, or magnes. ust. combined with tr. opii, and a small quantity of whiskey or brandy. Although the vomiting was not prevented by these remedies, it was rendered less severe. In these cases, to favour the evacuation of the common contents of the stomach, rice and barley water were drank plentifully.

To those persons severely but not most violently attacked, were administered spt. æther. nit. and tr. opii, or tr. opii, and spt. æther. sulph. or camphor and opium in powders, composed of one grain of the latter and three grains of the former. Rice and barley water were given to quench thirst and favour the evacuations. The irritation of the bowels was soothed by anodyne enemata, frictions were made to the extremities with flannels, and a sinapism or blister was applied to the epigastrium. After I treated a good many cases of this kind, I ascertained that the blister was superior in efficacy to the sinapism, from its having a more permanent effect, and substituted wherever the case did not require an instantaneous irritation to be excited. The above was the common treatment of cases of this kind, but some were managed differently. In the case of an old seaman who had had a second attack of the disease, and had lingered for several days in a state of great debility, I excited a moderate mercurial action. As soon as the gums became sore, the stools, which had been colourless and watery, began to resume their natural consistence and colour, and reaction of the system took place. In the two cases preceded by convulsions, copious blood-letting was practiced with the most decided efficacy, both patients having been immediately relieved by it, and eventually getting well. From one of them, a young and athletic man, upwards of thirty ounces of blood were drawn before the pulse at all sunk, and the convulsions were mitigated. Venesection was performed in five more cases and with success in three of them. The pulse in each of these cases was much excited, possessing great strength and activity. The two persons who died were completely relieved by the bleeding at first, and to me seemed to have the finest prospects of recovery, but they relapsed; one at the termination of twenty-four, and the other of forty-eight hours. The

lancet, however, was not used alone, but in conjunction with the warm bath, frictions, and some of the medicines mentioned. I was induced to resort to it, not only from the great excitement of the pulse, but from having understood it was the principal remedy resorted to at Constantinople, and was generally successful when early employed. While we were there, an English merchant residing in Pera was said to have been cured of the disease by blood-letting; and I was told by a Maltese, the captain of the port, that all persons who had been seized with cholera, and were not bled, had died. But notwithstanding, I could not think of bleeding in all cases: to have drawn blood in those of a mild kind would have been unnecessary, and in those accompanied by a feeble, fluttering, compressible and almost imperceptible pulse, with a cold, flabby skin, and every other sign of exhaustion, would have been, I conceive, an act of madness, and certainly would have cut short existence.

The cases of the most malignant nature, or those in which the system was from the commencement, or very soon after it, entirely prostrated, were treated in the following manner. As in other cases, rice and barley water were given to appease the insatiable thirst, small doses of magnesia ust. and sup. carb. sodæ, combined with laudanum and ol. menth. pip., to do away the constant inclination to vomit, and the antispasmodics spoken of, to overcome the spasms of the stomach, bowels, and extremities. To soothe the irritation of the bowels, and to assist the medicines taken by the mouth in procuring the desired effects, I used anodyne injections in some instances. Of the use of opium, however, either by the mouth or the rectum in these malignant cases, I cannot speak favourably; for in several of them, though it soothed pain and quieted spasm, it evidently hurried the fatal crisis by its sedative influence. When the disease began its career, the patients of this class, from the want of a bathing tub, were sponged with hot water, and were given hot pediluvia; but as soon as a tub was made, they were plunged into a bath of sea water and pulv. capsici ann. heated to as high a degree as could be borne, and having been kept in between twenty and thirty minutes, were taken out, rubbed dry, and covered with blankets. To cause reaction and to determine the blood towards the surface, blisters or sinapisms were applied to the epigastrium and extremities, hot stones and bottles of boiling water were kept constantly in contact with the hands and feet, and frictions with a flannel dipped in vol. liniment, or tr. capsici, and in some cases in boiling spt. terebinth. and pulv. cantharid. were made without intermission. To assist these external remedies in several cases, the vol. alkali, made into a julep, was administered, and in all of them hot brandy toddy was given in moderate quantities, and at short intervals. Having understood that tourniquets were used by some persons in the East Indies to prevent the determination of blood to the internal organs, I made repeated trials of their efficacy in both those mildly and in those violently attacked, and found them of no advantage in arresting the disease, although they produced a stagnation of blood in the extremities. Had the mere recession of blood to the internal organs constituted the disease, they perhaps might have been employed with success.

The above was the mode in which I treated the worst form of cholera; but of its utility I cannot boast, but I must rather acknowledge and lament its inefficacy in most instances. In some of these persons vitality was so far extinguished, that the hot bath, frictions, sinapisms, and blisters, had no more effect than they would have had on dead bodies.

The disease generally terminating as it began with a diarrhœa, a combination of blue mass and opium was prescribed with great success; the former medicine restoring the secretion of bile, of which a deficiency was indicated by the stools, and the latter soothing the irritation of the intestines and preventing their frequent evacuation. I twice substituted the sub. acet. plumbi for the opium, but with no advantage. When there was no fear of causing a return of vomiting—when the stomach was enfeebled, the appetite bad, and convalescence slow, tonics were used. The sulph. quinin. was employed internally, and at the same time was applied to the blistered surface on the epigastrium. Much benefit was

derived from the infusion of rad. colomb. and still more from that of pulv. cinch. offic., rad. columbo, rad. zinziber, and cortex aurantii.

I will end the account of the treatment by stating that several patients, after almost a perfect restoration of health, and several persons after they had returned to duty, having had a second attack from indulging the appetite, I adopted a strict system of regimen, and not only made my patients observe it while under my charge, but recommended it should be pursued for some days after they were assigned to duty.

Every thing that it may be useful to know of its treatment has been stated, and I will proceed to speak of the mortality of the disease, of the exciting causes, and of the remote or predisposing cause.

Before the occurrence of cholera, the crew, including the warrant and commissioned officers, was composed of two hundred and eleven persons. Of this number forty-three had the disease in a well developed form, that is, accompanied by vomiting and purging. Eleven died, or about one in four. If, however, the twenty-six cases of diarrhœa are reckoned to have been cases of cholera, the number of persons attacked with it was sixty-nine, and the mortality was not quite one in six. As many of the cases of diarrhœa were attended by nausea, heat, and oppression in the epigastrium, and other symptoms of cholera, and it is probable would have terminated in it, had they not have been taken under treatment, all the cases might be classed together without impropriety.

The most evident exciting causes were excesses in eating, and the remarkable vicissitudes of weather mentioned. I will not enter into a discussion of the remote or predisposing cause of cholera in India and other countries, but will only adduce my opinion concerning it at Constantinople and in the John Adams. My opinion of the disease as it occurred in that city and in this ship is, that it is not contagious, and that the remote cause may be considered a noxious substance, entering into the composition of the atmosphere. It is impossible to say what is the nature of this noxious substance. We can only judge by its effects and by our inability to account for the disease, when it is assigned to another cause with so much satisfaction. The existence of this substance should not be denied, because it is unsusceptible of demonstration. Remittent and intermittent fevers are supposed and believed by most physicians to be caused by miasmata, and nevertheless, no one has discovered and demonstrated their composition. It may be asked, why cholera, if owing to the existence of this substance, has never before prevailed in Constantinople? I answer by stating that an unfavourable climate has retarded the concurrence of those principles necessary for the production of this substance, in the same manner that certain climates have retarded the formation of the matter causing yellow fever and other diseases. As regards contagion having given origin to cholera in Constantinople, I will remark that the principal fact in which that opinion is based is the prevalence of the disorder in Odessa, between which and the former city a constant intercourse by shipping is maintained. But granting the disease was introduced into Constantinople by vessels from Odessa, can we not with as much reason suppose the air, as the persons they contained, to have been contaminated. Not being acquainted with any person in Constantinople from whom I could obtain correct information concerning the first appearance of cholera there, my opinion of its cause in that city is founded on what I have remarked in this ship.

That the disease was not caused in the John Adams by contagion, I am convinced by the following facts. No one belonging to the vessel was near or saw any citizen of Constantinople, or of the adjacent towns, Pera and Scutari, in which the disease was prevalent, who was or had been effected by it. The officers, twenty-three in number, with the exception of those who were slightly affected, were exempted from the disease, although day after day for two weeks they were wandering through the streets and amidst crowds of the lowest class of the inhabitants, who was said to have suffered more from it than any other class. Two cases happened among the boatmen, about forty in number, who from being often among the rabble on the landing places and in the harbour,

were as much exposed to contagion as the officers. The officers and boatmen were the first, and may be said to have been the only persons who visited the city, and were the last to take the disease. While the sick were on Long Island, between twenty and thirty men and women, belonging to the neighbouring country, visited it for various purposes, and although they came near us, and some walked through the hospital, none of them caught the disorder or communicated it to their relations and friends on returning home. The launch, a boat manned by seventeen rowers, or, of whom died of cholera, made several trips to a fountain in the harbour of Vourla. Near the fountain is a house owned by a Maltese and a Turk, who supply ships which go there with provisions, and keep liquors and other groceries for sale. This house is a rendezvous for the people of two adjacent villages, and had about it at all times during the day a considerable number of them. The men belonging to the launch were for hours each time they went for water among the persons collected about the house and the fountain, and notwithstanding, I have not heard of their having communicated cholera to any one of them.

From these facts and others which might be stated, I am firmly convinced that contagion was not the remote or predisposing cause of this complaint in the John Adams, and I do not believe contagion was the cause of it at Constantinople, as they have satisfactorily proved to me that cholera is not under all circumstances contagious. I have been induced to advance my opinions and to give these facts respecting the causes of this disease from a conviction that a most unreasonable fear and horror of it exists, and that the quarantine laws for its prevention are unnecessarily rigid. In all the countries of Europe bordering on the Mediterranean, the plague is an object of less terror. The people of Asia and Africa, living on this sea, entertain for cholera the utmost horror. All vessels from the Levant are quarantined at Tripoli and Tunis, and when we arrived at Long Island, the inhabitants of Smyrna would not hold any intercourse with us, and in fact declared the vessel in a state of quarantine, a circumstance never before known to have happened in any Turkish port. On the arrival of the ship at Port Mahon in October, the junta of health, having been informed of our misfortune, quarantined her for forty-six days, and to purify her, and to expel from among us what they termed in a manifesto the most voracious destroyer of mankind, required many things to be done, some of which I will mention. The ship was completely emptied and cleaned out, and afterwards alternately washed and fumigated with chlorine for twelve days. The whole of the crew were three times fumigated with the same gas, the clothes of every person belonging to the ship were either washed or exposed to the air, the sails of the ship, both those which had been used and those which had been stowed away, were immersed in salt water for twenty-four hours, and a daily report was made by me of all those sick, of their rank, diseases, and of the numbers admitted or discharged from the sick list. We were made to observe many regulations altogether rigid and useless, and to do other things quite as unnecessary as those mentioned.

Of such importance did the junta think the arrival of the John Adams still suspected to be infected with cholera, that they forthwith reported the circumstance to the king of Spain, and requested instructions how to act. The king directed that as the ship was in quarantine she should be allowed to remain in port, but at the same time ordered that no vessel having the cholera on board shall be permitted to enter any port within his dominions.

Case of Spontaneous Evolution of the Fetus. By S. C. SNYDER, M. D. of Charlestown, Virginia. (Communicated in a letter to Dr. Dewees.) Two weeks since, I was called upon and visited a Mrs. O. B. of this place. She was in labour, and informed me that the liquor amnii had escaped. In consequence of this information, I proceeded immediately to examine her. I found the left shoulder of the child lodged against, or towards the left acetabulum, and its body across the pelvis of the mother, towards the right sacro-iliac symphysis. As the uterus was acting with considerable energy, I determined not to attempt

turning the child without having another physician to concur with me, and share the responsibility. Dr. Cramer was sent for, but being absent, Dr. Yates was brought. Upon an examination, he agreed that an attempt ought to be made. The funis was still pulsating, the os tinea well dilated, and the mother's pelvis very capacious. She had had, also two children. I therefore introduced my hand into the vagina; but so *instantaneous and violent* were the contractions of the uterus upon every, and the least agitation or movement of the child, that for fear of rupturing the womb, I determined to desist. I then told Dr. Yates, if he wished, I would be gratified if he would relieve me, and make an effort. He declined, however, and submitted the case entirely to my judgment, as an older and much more experienced accoucheur. I determined then to wait for a "spontaneous evolution" knowing that the worst of the case could only fall on the child, in any event, and that even so deplorable a termination as this would be far preferable in the *hand of nature*, than to have it together with a ruptured uterus, (and as a consequence, the inevitable death of the mother,) from my interference!!

That an *evolution would* take place, I inferred from the capacity of the pelvis, the size of the fœtus, the activity of the womb and the health of the mother. And I was not disappointed; but the child was lost! Soon after my effort to turn, the arteries of the funis ceased to pulsate. The shoulder and arm, not long afterwards, were protruded entirely beyond the labia; and as the left side and pelvis of the child descended the longest diameter of the mother's pelvis, they gradually turned: so that by the time the body of the child became visible, its *back* as well as side presented.* I now passed my index fingers around the child to its groins, and immediately and easily pulled down its pelvis and lower extremities. The head followed after a moment's delay. The left arm, shoulder, and side of the child, were considerably swollen and livid. The placenta was removed without much difficulty. There was sufficient hæmorrhage, however, to require the use of the tampon, cold wet cloths to the lower part of the abdomen, and a dose of the sacch. saturni. I would here remark that I never give less of this medicine than from x. to xx. grs. in such cases; and that I never knew the least inconvenience result from it—excepting, perhaps, the necessity occasioned for a larger dose of castor oil afterwards.

From the time I saw the patient first, until her delivery, I suppose about ten hours elapsed. There was a constant *tenesmus* or bearing down of the womb—such as occurs after the exhibition of the ergot. These circumstances, together with the position of the child in the pelvis, induced the fearful apprehension that peritoneal inflammation, sloughing or abscess might be the consequence. But my patient walked about her room four days after her confinement, and I found it necessary only to bleed once and direct one or two doses of oil and the saline julep.

You may *not* infer from the above statement, that I would always wait ten hours for a spontaneous evolution;—especially if the fœtus were dead. Even in this case, with which every thing concurred to make a reasonable delay safe, I was induced towards the close of it, to make preparation for the mutilation of the child. And I probably should have mutilated it, had not the patient borne her sufferings with almost unparalleled fortitude and patience.

In all cases, I think it extremely important for a physician to observe closely the operations of nature, and to imitate her as nearly as practicable. Guided by this opinion, should I ever have a case requiring the destruction of the child or its mutilation, I would proceed in the following manner, to wit:

With the scissors I would perforate the abdomen and remove its contents as completely as possible, in order to facilitate the *doubling* of the child and the consequent descent of its breech into the pelvis of the mother. I would then fasten the blunt hook upon the brain of the child's pelvis and should not fear to bring it away with ease and safety. This plan would leave *no head in the uterus*, and could do *no violence* to the mother.

* The arm and shoulder still remaining out, however.

Statement of Deaths, with the Diseases and Ages, in the City and Liberties of Philadelphia, from the 1st of January, 1831, to the 1st of January, 1832.

DISEASES.	Under 1 y ^r of age	1 to 2	2 to 5	5 to 10	10 to 15	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100	100 to 110	TOTAL.
Abscess - - - -	0	0	2	0	1	0	6	3	3	2	3	1	0	0	0	21
Atrophy - - - -	16	3	1	2	0	0	1	2	1	0	1	1	1	0	0	29
Apthæ - - - -	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Angina Pectoris -	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Apoplexy - - - -	0	0	0	0	0	1	7	7	9	12	13	8	3	0	0	60
Aneurism - - - -	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	4
Asthma - - - -	0	0	0	0	0	0	0	0	3	3	3	0	0	0	0	6
Bronchitis - - - -	11	8	12	3	1	2	5	5	3	2	4	4	1	2	0	63
Burns - - - -	3	4	12	4	0	0	0	1	1	0	0	0	0	0	0	25
Bite of Rattle-Snake	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Consumption - - -	23	18	18	16	8	36	179	167	105	58	24	17	4	0	0	673
Convulsions - - -	174	41	31	9	0	2	5	7	5	2	1	0	0	0	0	277
Catarrh - - - -	31	7	8	0	0	0	0	2	2	2	1	1	2	2	0	58
Cholera - - - -	199	89	14	1	1	3	3	2	0	2	3	3	0	0	0	320
Child-Bed - - - -	0	0	0	0	0	0	2	7	0	0	0	0	0	0	0	9
Caries - - - -	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	4
Cancer - - - -	0	0	0	0	0	0	1	4	7	3	2	2	0	0	0	19
Casualties - - - -	2	0	3	1	1	4	3	3	2	1	1	0	0	0	0	21
Cachexy - - - -	0	0	0	0	1	0	0	1	0	1	1	0	0	0	0	4
Contusions - - - -	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	3
Concussion of Brain	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Cholic - - - -	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	4
Chorea Sancti Viti	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Colica Pictonum -	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Debility - - - -	173	18	14	4	1	0	3	6	8	15	24	22	5	0	0	293
Dyspepsia - - - -	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	4
Disease of the Heart	4	1	0	3	1	3	3	2	3	1	2	1	0	0	0	24
Hip-Joint - - -	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Knee-Joint - -	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Spine - - - -	4	0	1	0	0	0	1	1	0	0	0	0	0	0	0	7
Drunkenness - - -	0	0	0	0	0	0	1	11	7	5	2	1	0	0	0	27
Drowned - - - -	0	0	0	5	5	2	9	20	7	2	1	0	0	0	0	51
Diarrhœa - - - -	28	17	8	2	1	0	5	3	2	6	3	2	4	0	0	81
Dysentery - - - -	19	17	14	10	4	2	13	12	12	9	5	3	1	0	0	121
Death by Lightning	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Dropsy - - - -	6	6	5	5	2	3	8	29	21	11	10	4	1	0	0	111
of the Breast	0	1	5	3	0	0	7	6	6	3	10	6	1	0	0	48
Head - - - -	92	57	39	13	3	0	1	3	0	0	0	0	0	0	0	208
Diabetes - - - -	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Decay - - - -	0	0	1	0	0	0	1	1	1	1	0	0	2	0	0	7
Drinking Cold Water	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Erysipelas - - -	11	0	2	0	0	0	0	1	1	1	0	0	0	0	0	16
Epilepsy - - - -	1	0	0	1	0	1	0	4	2	1	1	1	0	0	0	12
Eruptions - - - -	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Effects of Heat - -	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Found Dead - - -	18	0	2	0	0	0	0	5	8	8	2	2	0	0	0	45
Fractures - - - -	0	0	0	0	0	1	3	1	1	0	0	1	0	0	0	7
Fungus Hæmatodes	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Fever - - - -	13	7	5	5	1	4	9	5	7	5	4	1	0	0	0	66
Bilious - - - -	4	2	1	3	2	8	7	7	11	6	3	1	0	0	0	55
Typhus - - - -	0	2	0	7	6	6	26	13	9	9	6	0	0	0	0	84
Remittent - - -	1	2	5	3	4	3	9	5	2	3	3	3	0	0	0	43
Intermittent - -	4	1	1	0	0	0	1	4	0	0	2	0	2	0	0	15
Nervous - - - -	0	0	0	0	1	0	4	1	0	1	1	0	0	0	0	8
Hectic - - - -	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3
Puerperal - - - -	0	0	0	0	0	1	10	2	1	0	0	0	0	0	0	14
Malignant - - - -	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2

DISEASES.	Under 1 yr of age	1 to 2	2 to 5	5 to 10	10 to 15	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100	100 to 110	TOTAL.
Brought over -	840	305	205	101	45	85	332	362	252	178	139	88	27	4	0	2973
Fever, Scarlet -	13	31	91	54	5	1	4	1	0	0	0	0	0	0	0	200
Gout -	0	0	0	0	0	0	0	0	0	5	0	0	2	0	0	7
Gangrene -	2	0	4	1	0	1	1	1	2	0	1	0	0	0	0	13
Hives -	39	23	52	12	0	0	0	0	0	1	0	0	0	0	0	127
Hooping-Cough -	31	13	18	5	0	0	0	0	0	0	0	0	0	0	0	67
Hæmorrhage -	3	0	0	1	2	2	7	6	3	3	4	0	2	0	0	33
Hernia -	0	1	1	0	0	0	0	1	1	4	3	2	1	0	0	14
Insanity -	0	0	0	0	0	0	6	9	5	1	3	0	1	0	0	25
Influenza -	1	1	0	1	0	2	0	5	0	4	1	4	4	1	0	24
Introusception -	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Inflam'n of Lungs -	33	17	19	4	4	5	20	19	22	19	19	7	3	0	1	192
Stomach -	4	1	2	1	1	2	4	7	3	3	4	2	0	0	0	34
Liver -	2	0	2	4	1	1	5	12	6	4	0	4	1	0	0	42
Brain -	17	5	6	13	4	3	10	15	8	4	1	1	1	1	0	89
Kidneys -	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Bladder -	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	4
Knee-Joint -	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Uterus -	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	4
Breast -	8	5	0	2	1	0	3	2	3	1	1	2	0	0	0	28
Heart -	0	0	0	2	0	1	2	0	0	0	0	0	0	0	0	5
Bowels -	31	14	10	2	0	3	6	5	2	1	4	2	1	0	0	81
Peritoneum -	0	0	0	1	2	7	8	3	0	2	0	0	0	0	0	23
Jaundice -	7	0	0	0	0	1	0	1	1	2	1	0	0	0	0	13
Locked-Jaw -	2	0	0	0	0	0	4	0	1	0	0	0	0	0	0	7
Laudanum to Excess -	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
Measles -	11	8	3	0	0	0	0	0	1	0	0	0	0	0	0	23
Mania a Potu -	0	0	0	0	0	0	23	44	31	5	5	2	0	0	0	170
Mortification -	4	1	2	1	0	1	1	5	1	4	3	0	1	0	0	24
Old Age -	0	0	0	0	0	0	0	0	0	1	13	37	21	2	0	74
Palsy -	0	0	0	0	1	0	2	3	6	10	14	12	8	3	0	59
Pleurisy -	1	0	0	1	0	1	2	5	3	2	6	2	1	0	0	24
Perished with Cold -	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	4
Poisoned -	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
Phlegmasia Dolens -	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Rupture -	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Rheumatism -	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	4
Small-Pox -	1	2	1	0	0	0	6	3	1	0	0	0	0	0	0	14
Stricture -	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Sudden -	18	2	1	1	1	0	10	21	9	11	4	0	1	0	0	79
Suicide -	0	0	0	0	0	0	5	2	2	1	0	0	0	0	0	10
Sore Throat -	4	4	7	6	1	0	2	0	0	1	0	0	0	0	0	25
Suffocation -	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Stone -	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2
Shot, (accidentally) -	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Scrofula -	12	3	3	0	3	1	4	2	0	0	0	0	0	0	0	28
Stroke of the Sun -	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Still-Born -	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	316
Syphilis -	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	4
Scirrhus -	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Tumours -	0	0	0	0	0	0	1	2	2	1	0	0	0	2	0	8
Teething -	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Thrush -	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Ulcers -	2	0	0	1	0	0	2	2	1	2	3	0	0	0	0	13
Unknown -	15	1	5	1	2	1	7	11	8	7	1	1	0	0	0	60
Varioloid -	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	4
Violence -	3	0	0	0	0	0	0	2	1	0	1	0	0	0	0	7
Worms -	0	2	6	0	0	0	0	0	0	0	0	0	0	0	0	8
	1439	444	441	217	74	123	495	559	380	278	220	145	91	30	3	34939

Of the following there were Males, of 20 years and upwards, 1,256; 1,491 under 20 years; 962 Females, of 20 years and upwards, and 1,230 under 20 years.

There were 414 returns received at the Health Office, of persons who died in the Alms-house of the City during the year, and 475 people of Colour are included in the statement of Interments.

Agreeably to returns made at the Health Office, and collected from 135 Practitioners of Midwifery, there have been born in the City and Liberties, from the 1st of January, 1831, to the 1st of January, 1832, 3,787 Male, and 3,555 Female Children: making the total number of births 7,342; leaving a difference between the births and interments of 2,403.

Deaths in each Month of the within period.

	Adults.	Children.	Total.
January - - - - -	159	147	306
February - - - - -	166	170	336
March - - - - -	156	173	329
April - - - - -	197	162	359
May - - - - -	148	164	312
June - - - - -	114	198	312
July - - - - -	178	407	585
August - - - - -	156	286	442
September - - - - -	206	275	481
October - - - - -	175	203	378
November - - - - -	184	207	391
December - - - - -	380	328	708
	<hr/>	<hr/>	<hr/>
	2219	2720	4939
Still-Born - - - - -	-	-	316

4623

By order of the Board of Health,

SAMUEL R. FRANKLIN, *Health Officer.*

Health Office, Philadelphia, January 1st, 1832.

Population in the year 1830, within the limits of the Bills of Mortality, 167,812

Add for 1831, four per cent. on the above amount, making - 174,524

General proportion of Mortality to Population 1 in 37.7 (Still-born excluded.)

Deaths by Consumption 1 in 7.3 of the total mor-

tality, or - - - - - 1 in 6.8 do. do.

Deaths by Fevers, (Scarlet excluded) - 1 in 12.5 do. do.

Deaths by Fevers, (including Scarlet) - 1 in 9.4 do. do.

Deaths by Inflammations - - - - - 1 in 9.1 do. do.

The Mortality from Scarlet Fever is unusually great, being no less than 200.

By referring to the monthly statement of deaths, a very great increase will be observed to have taken place in December, the amount for which is no less than 708. As this month is, next to May, that which presents the lowest average mortality, the increase was doubtless connected with the early visitation of severely cold weather.

G. E.

Observations on the Dew Point and on the Means of Ascertaining it. By J. P. ESSEX, Esq. (Communicated in a letter to Dr. Hays.) The importance of meteorology is universally acknowledged to be so great, and atmospheric changes so intimately connected with health and disease, that any new discovery, by

which the most important of these changes can be detected, and even predicted, cannot fail to be highly interesting to the intelligent physician.

Now, the experiments of Dalton and others have demonstrated, that the quantity of vapour in the atmosphere at any time may be ascertained by taking the "dew-point," that is, by cooling down a body below the temperature of the air, and noting its temperature when the moisture begins to settle upon it.

Mr. Daniell and Mr. Jones have both invented hygrometers on this principle, using ether for refrigeration; but as these instruments are hardly to be procured in this country, it is interesting to know that the following simple method which I have constantly used for several years, is not surpassed in accuracy by either of the instruments mentioned above. I place a common thermometer in a tumbler of water, and cool this water gradually by ice, or other artificial means, such as the muriate of ammonia and nitrate of potash, until the moisture begins to settle on the outside; this is the "dew-point," a very appropriate name, derived from the discovery of Mr. Wells, who demonstrated that dew does not fall from the air, as was generally supposed, but only settles on those bodies in the night, which become cold by radiation. A table is given in the Edinburgh Encyclopædia, Art. Hygrometry, of the number of grains of moisture contained in a cubic inch of air, corresponding to the different degrees of Fahr.

Tables are also given in Ure's Chemical Dictionary, and in Turner's Chemistry, of the pressure on the barometer, due to the vapour in the atmosphere at various temperatures of the dew-point. For instance, when the temperature of the dew-point is 32° , the pressure on the barometer is $\frac{1}{20}$ th of an inch, or one hundred and fiftieth of the whole; and when the dew-point is 80° , which is about its maximum in the torrid zone, the pressure on the barometer is one inch, or one-thirtieth of the whole.

The highest I have ever seen the dew-point in Philadelphia is 76° , which gives a pressure of $\frac{88}{100}$ th of an inch. The lowest was 6° below zero, which gives a pressure of less than $\frac{1}{10}$ th of an inch.

However simple and easy the method of taking the dew-point, as mentioned above, I found it occupied so much time to take it three times a day that it became desirable to discover some plan by which time might be spared, and it occurred to me that there might be some proportion between the temperature of the air, the temperature of a thermometer surrounded with wet paper, and the temperature of the dew-point. If so, and this ratio could be discovered, the temperature of the dew-point could be ascertained with almost the same ease as the temperature of the air—and that too at all times without the use of artificial refrigeration. In my first experiments on this subject, I took it for granted that the temperature of a thermometer surrounded with wet paper, would be the same finally, whether the thermometer is moved rapidly through the air, or is permitted to lie at rest in still air; for such is stated to be the fact by Professor Leslie. But I have discovered, by very many experiments, that the temperature will be lower by motion than by being still in motionless air, sometimes as much as 4° .

The method I adopt in endeavouring to ascertain this ratio is this: I take the temperature of the air and the temperature of a thermometer, with the bulb surrounded with wet paper, which I call the *evaporating point*, and the temperature of the dew-point at the same time twice a day, at sunrise and at noon. These three temperatures I set down in corresponding columns, and after comparing a great number of these observations I hope to be able to discover such a relation between them that by knowing any two of them the third may be deduced.

The temperature of the evaporating point is always taken by swinging the wet bulb rapidly in the air; and in taking the dew-point I always wipe the dew off the tumbler entirely dry, after it has once settled, carefully observing whether it will settle again—and the temperature at which it just ceases to settle, as the water is getting warmer, is the dew-point.

As a sample of my method, I send you an extract from my meteorological

journal of observations made at noon, from which it will appear that when the temperature of the air is near 60° the evaporating point is nearly an arithmetical mean between the other two, and when the temperature of the air is above this, the evaporating point and the dew-point are nearer to each other than the arithmetical mean, and when the temperature is lower they are further apart.

Temperature of dew-point	60	62	64	66	68	70	71	60	50	46	52	48	44	41	42	46	41	41	33	40	30	21	5	8	1	3
Temperature of evaporating point	70	72	73	74	75	76	77	68	60	58	59	57	54	52	50	50	48	46	43	39	30	20	20	20	18	12
Temperature of air	90	88	84	81	80	80	80	78	74	72	67	67	64	63	56	53	53	50	45	45	36	25	23	22	14	

These observations are culled out from various parts of my journal, and they contain the extremes nearly which I have observed during the last nine months.

For further information on this new department of meteorology, see Daniell's Meteorology; see also some essays of mine in the Journal of the Franklin Institute for 1831 and 1832, containing amongst other things a "new theory of rain."

Among the various uses to be derived from an attention to the dew-point, I will, in conclusion, suggest the propriety of trying whether the dew-point of the breath is the same in phthisis pulmonalis as in health.

I find, as was stated in the last number of this Journal, by breathing on a tumbler of water, that the dew-point of my breath is 94°. If it should be less than this in phthisis pulmonalis, or fever, or in any other disease, the intelligent physician will not fail to derive advantage from the discovery.

Philadelphia, March 10th, 1832.

Irreducible Hernia. By WILLIAM M. FANESTOCK, M. D.—We had an opportunity a few days since, of examining a hernial tumour of very great size, and of fifty-five years standing, which may be interesting as another evidence of the adaptive powers of various parts of the system to endure new burdens, which nature or accident occasionally throws upon a part destined for other purposes. M. Brim, ætat. 79 years, a revolutionary soldier, and now residing near Waynesborough, Franklin county, Pennsylvania, first perceived a small tumour in the region of the internal abdominal ring, after severe exercise and straining labour, in the Highlands of New York state, 1777, which increased very much and descended during the hardships and severity of the winter at the Valley Forge and the succeeding campaigns which achieved our glorious independence. It continued to enlarge though still reducible for thirty years, during part of which time he wore a truss, but has not been able to reduce it for nearly twenty-five years, and now presents a very enormous and heavy tumour, measuring from the abdominal ring to the symphysis pubis two feet, transverse circumference two feet two inches. The protrusion is principally on the right side, and appears to be chiefly intestine; the penis is entirely buried in the tumour, and only discernible through a patulous orifice about the middle of the upper surface near the left side of the tumour.

A very singular circumstance attending this case is, that the subject has suffered but little pain from it; no severe pain, colic, or any symptom of strangulation having ever occurred; he has at all times eaten every variety of food with impunity; is generally very comfortable in his evacuations, seldom costive, occasionally flatulent, which distends the tumour very much and produces some uneasiness, but is immediately relieved on taking some stimulating carminative cordial, which discharges the wind with great force and violent commotion in the bag. The greatest inconvenience he experiences is, to sustain an equilibrium in walking, from the great weight of the tumour, which constantly tends to throw the body forward, and particularly on rising from a chair. By sitting on the ground or floor so as to relax the tension of the sac, he can manage to protrude the penis about three-fourths of an inch, and pass the urine with ease, which

otherwise would act as a great irritant and excoriate the skin. He is in every respect a comfortable old man, with a flow of spirits and good humour, and delights in nothing more than fighting over again the battles of the revolution, and recounting the hardships which emphatically tried men's souls.

A Discourse on the Epidemic Cholera Morbus of Europe and Asia; delivered as an Introductory Lecture at the College of Physicians and Surgeons in the City of New York, November 9th, 1831. By JOSEPH MATHER SMITH, M. D. Professor of the Theory and Practice of Physic and Clinical Medicine.—We ought before this to have expressed the gratification we received from the perusal of this able discourse. The concluding remarks refer to a subject of so much interest at the present moment, that we cannot refrain from quoting them.

"If the views which have been offered be correct," says Dr. Smith, "we may advance with confidence to the final inquiry, how far a system of medical police can protect us from the invasion of the epidemic cholera." The atmospheric origin of the epidemic being determined, the problem may be solved in a few words. The express design of the laws establishing quarantines, expurgation of ships, merchandise, &c. is to prevent the importation of *poisons* which are productive of epidemic diseases. Some of the contagions being poisons of that kind, as that of small-pox, and also certain infections, as the malignant miasm producing yellow fever, come properly under the prohibitory operation of those laws. These poisons are capable of adhering for a season to various materials, and may be transported in ships across the seas; and hence, in preventing their introduction, the efficacy of quarantine is every where acknowledged. But here the prophylactic powers of quarantine end. Against the invasion of meteoratic epidemics all public enactments are, in effect, nullities. The causes of these diseases being certain influences which pervade the general atmosphere, are as uncontrollable by human agency as stormy clouds and tempests. That the cause of cholera is of this sort, cannot be doubted; and in this conviction, we must regard the sanitary measures, recently adopted by our municipal authorities as impotent and nugatory. They serve but to dissipate popular apprehensions. If any measure of purification be insisted on, it should consist in merely expelling the air that may be retained in the holds of ships and packages of goods during their passage from sickly to healthy ports. Supposing the air thus transported to preserve its morbid properties, no persons would suffer from it, but those immediately exposed to it; or in other words, it could not induce in the general atmosphere an epidemic influence. Facts, however, abundantly show, that such precautions are utterly useless. In no instance is it known that a ship or any species of merchandise after leaving an epidemic region has produced a case of cholera. Even in places which have been recently devastated, goods of all descriptions are regarded as perfectly innocuous. The Extraordinary Committee established at Moscow, by order of his majesty the emperor, conclude their report with the explicit declaration: "That it is unnecessary to subject merchandise to fumigation in those places where the cholera has existed."

Mode of Reasoning in Medical, as Compared with other Subjects.—We have been favoured by Dr. HENRY BRONSON, of Albany, New York, with a small pamphlet, having this title, and of which we presume that he is the author. It is an able production, marked by sound reasoning, and is evidently the offspring of a cultivated mind. It should be as widely circulated as possible, being calculated to lead the public to a juster appreciation of medical science, and a more discriminating judgment of professional capacity. The following extract will exhibit the object of the writer of the pamphlet.

"The conclusion to which we would bring our remarks is this: the only safety for the public on this momentous subject, is to confine the practice of physic to men of truly enlightened and philosophical minds. But this can never be accomplished, until the public at large are made more strongly to

feel the multiplied and peculiar difficulties attendant on medical inquiries. It is from *enlightened public opinion* alone, that we can hope for the removal of what is still an enormous evil in this country—the intrusion of ignorant men, of weak and ill-disciplined minds, into the medical profession. Public opinion ought to check the facility with which degrees and licences are granted in some of our medical institutions. How often are men taken from the plough or the anvil, with the bare rudiments of an English education, and in two or three years turned out upon society, as the constituted guardians of the public health! Such men, in most cases, could not sustain themselves for an hour in the profession of divinity or of law. Their utter incapacity for philosophical investigation would be manifest to all; but shielded by the mysteries of a profession which the public eye cannot penetrate, they too often gain wealth and influence, by the grossest quackery and imposition. If our remarks in this article should lead any of our readers to appreciate more highly the amount of mental discipline which ought to be demanded in medical practitioners, our labours will be amply repaid.”

Gooch's Midwifery.—Messrs. Carey & Hart have just published the Lectures on Midwifery, and on the Diseases of Women and Infants of the late ROBERT GOOCH, M. D. formerly lecturer on midwifery at St. Bartholomew's Hospital, and advantageously known to the profession through his various publications. The present work has been prepared for the press by ROBERT SKINNER, Esq. from notes taken by him when attending Dr. Gooch's lectures. We shall take a future opportunity of noticing this work more particularly.

Ryan's Manual of Medical Jurisprudence.—Messrs. Carey & Lea have republished this work, with notes and additions, by R. EGLESFELD GRIFFITH, M. D. In this edition the editor has entirely rewritten the chapter on the laws relating to the profession, so as to accommodate it to the laws of the several states—he has also greatly extended the chapter on the important subject of medical evidence, which was but cursorily treated of by the author, and is not noticed by Dr. Beck in his valuable treatise. On a former occasion, (Vol. IX. p. 146,) we expressed our opinion of the excellence of the original work, which has been considerably enhanced by the valuable additions which have been made to it, and we congratulate Dr. Ryan on having fallen into the hands of so judicious and accomplished an editor on this side of the Atlantic, as Dr. Griffith.

Larrey's Surgical Memoirs.—Messrs. Carey & Lea have just published a volume of these memoirs, containing a sketch of the campaigns of Russia, Germany, and France, and which, like every thing from the pen of that veteran surgeon, is equally interesting and instructive. We shall notice it more particularly in our next No.

New Dictionary of Medical Science and Literature. Messrs. Gray and Bowen have in press a new Dictionary of Medical Science, containing a concise account of the various subjects in *Anatomy, Physiology, Pathology, Therapeutics, Materia Medica, Surgery, Obstetrics, and Pharmacy*, with the Etymology and Orthoepey of the terms, and their Greek, Latin, French, and German synonymes,—a copious Bibliography appended to the different articles, and Bibliographical Notices of the most eminent Authors in the different departments of Medical Science, with a Catalogue of their principal works—presenting an Epitome of the existing state of Medical Science and Literature. By R. DUNELSON, M. D. Professor of Medicine in the University of Virginia, &c. &c.

The work will not be a mere Dictionary of terms; it will comprise concise histories of diseases; description and doses of various kinds of Medicine, with formula for the different Pharmaceutical preparations, &c. &c.

From the known talents and erudition of the author, it may be safely predicted that this work will constitute a valuable addition to our literature.

Elements of Physiology.—By R. DUNGLISON, M. D.—This work, which is now in the press, will be comprised in 2 vols. 8vo. and will be illustrated with numerous plates and wood cuts. We shall not fail, as soon as it is published, to lay an account of it before our readers.

Cyclopædia of Practical Medicine and Surgery.—Messrs. Carey & Lea have in preparation a Cyclopædia of Practical Medicine and Surgery, edited by ISAAC HAYS, M. D. and to be published in numbers, each containing one hundred and twelve pages, double columns; price to subscribers, 50 cents per number. The object of this work is to present to the American practitioner a complete Library of Medicine and Surgery, exhibiting the actual state of those sciences, and constituting an authoritative book of reference, in a condensed form, and at a trifling expense.

Advantages will be taken, in its preparation, of the French, English, and German Cyclopædias, now in the course of publication, and a large mass of American materials will be added, which have never yet been embodied in any work of the kind. At the termination of each article copious references will be given to the best writers on the subject, so as to enable the student who desires it, to pursue his investigations with the least trouble and greatest advantage.

As an evidence that the means of accomplishing this important undertaking have been secured, it may be stated that the coöperation of the most distinguished medical men in the United States has been promised, among whom are Professors Chapman, Dewees, Dickson, Geddings, Gibson, Horner, Jackson, Mott, Warren, &c. and Drs. Baché, Bell, Coates, Condie, Emerson, Griffith, Harris, Hodge, Randolph, Wood, &c.

The first number will appear early next autumn, and be continued regularly at intervals of about a month. It is expected that the whole will be completed in forty numbers, making eight volumes.

University of Pennsylvania.—The number of students in this institution, on the 1st of January last, was eight hundred and forty-nine; of whom three hundred and ninety were attending the medical lectures, one hundred and twenty-six belonged to the collegiate department, one hundred and sixty-four to the academical department, and one hundred and sixty-nine to the charity schools.

Transylvania University.—There were attending lectures in the Transylvania University during the past winter, two hundred and thirteen medical students, and thirty-seven law students.

NECROLOGY.

It is our painful task to announce the loss which this Journal and medical science has sustained in the death of CHARLES DRAKE, M. D. of New York. Dr. Drake was deeply imbued with the soundest medical doctrines, was remarkable for the perfect devotion and conscientiousness with which he pursued truth, and for the simplicity and ingenuousness of his character. His death is a public calamity.

We trust that some one of his friends will favour us with a biographical notice of him. The life of such a man cannot fail to present an instructive lesson, and to offer a bright example for imitation to his professional brethren.

Died on the 9th of December, 1831, ALEXANDER COVENTRY, M. D. late of Utica, New York. Dr. C. was the son of Captain George Coventry, who commanded an independent company raised in the then colony of New York, in the year 1761, and served in the forces of his Majesty George III. in the old French

war, as it has usually been called. Dr. C. was born at Fair Hill, the seat of his father, near Hamilton, Scotland, 27th of August, 1766; was educated in the schools of Hamilton and Glasgow, and studied the profession of medicine under Drs. Stuart and Cross, of the former place. In 1783-4 he attended the medical lectures at Glasgow, and in the winter of 1784-5, the lectures of Munro, Cullen, Hope, and Gregory, at Edinburgh. In 1785 he was admitted a Burgher of the town of Hamilton. In July of same year, he sailed for America, to attend to some property, which had been left him there by his father. Dr. C. first settled at Hudson, New York, and soon became actively engaged in agricultural pursuits, in conjunction with the practice of his profession. In 1787 he married Elizabeth, daughter of Mr. John Butler, of Branford, Connecticut, by whom he had eleven children, ten of whom are yet living. Mrs. Coventry died in Deerfield, near Utica, in 1815. The Dr. left Hudson, and settled at Romulus, on the east side of the Seneca Lake, about the year 1790. It was whilst residing in this new and then unhealthy district, that he had an opportunity of studying the endemic fevers of the country, in all their forms and grades. He has been heard to say, that on one occasion, he had fourteen sick of fever in his own house. In notes made at the time, he observes, that on his return from a journey to Albany, in August, 1792, he found two-thirds of the citizens of Geneva sick, and in his own family two only remained well. In his own person he had repeated attacks of the prevailing fever. On account of the sickness of himself and family, he left the "Lake country," and moved to Utica, then "Fort Schuyler," in the year 1796, and entered into mercantile business with Mr. John Post. At this time it was his wish to abandon the practice of medicine, as his attention was directed to other pursuits. But finding, on further experience, the mercantile business uncongenial to his tastes and habits, and yielding to the frequent calls and solicitations of his friends and acquaintances, he relinquished that business to his partner, and purchased a farm on the north side of the Mohawk river, and once more engaged in his favourite pursuits of agriculture and horticulture. From this period until death, his time and attention were divided between his farm, his books, and the practice of his profession. In the year 1800, Dr. C. was elected a member of the society for the promotion of agriculture, arts, and manufactures. During several successive years, he was President of the Medical Society of the County of Oneida. In 1822 he was elected a permanent member of the Medical Society of the state of New York, and in 1823 was elected President of the same body, and reelected in 1824. During the same year he was appointed by the Regents of the University of New York, one of the Trustees in the Western Medical College at Fairfield. In 1825 he was elected a member of the Albany Lyceum; and in 1826, corresponding member of the Linnean Society of Paris. On the organization of the Oneida Agricultural Society, he was appointed corresponding secretary, and delivered the first address before that body. From the period of his emigration to the west, until the time of his death, Dr. C. was an occasional contributor to the political and agricultural papers of the day. His principal medical writings are his addresses before the State Medical Society, on endemic fever; a short article on yellow fever, published in the Edinburgh Medical and Surgical Journal; an article on goitre, and one on dysentery, in the New York Medical and Surgical Journal. Dr. C. possessed naturally a healthy constitution. After his removal from the west, rarely did he ever complain of indisposition, except from an occasional attack of rheumatism, a few years before his death. His habits were uniformly correct and regular; in his living plain and frugal—always temperate in eating and drinking. During the last few years of his life, he devoted himself more regularly and steadily to his profession—the duties of which, in town and country, were too arduous, it is believed, at his period of life; and yet it seemed impossible that it should be otherwise; for, as a family physician, he was eminently distinguished; and, not only in our own, but in the adjoining counties, he acquired and maintained to his death, a standing no less respectable, as a consulting physician. Hence, his medical and

other friends and acquaintances felt happy and safe whenever they could secure his skill and experience. No man of the profession, within our little circle of acquaintance, was more devotedly engaged in the glorious work of relieving the ills to which poor human flesh is heir, than our venerable and illustrious Coventry, during the last few years of his life. He seemed, like the celebrated Dr. Priestly, determined to finish his own work himself—appropriating all his spare time in bringing up and completing his journal, in which, during forty years, he had noted daily whatever he conceived useful and important in his profession, in politics, in agriculture, and in science—besides devoting himself, with unwearied assiduity, to all calls in the practice of his profession. In his journal are probably to be found his most valuable writings; and here, as in the other instances of his daily conduct through life, he has left us a bright example, worthy of imitation, even in these days of human perfectibility. Like the soldier who falls in the defence of his country's cause, our lamented friend and compeer, in the midst of a successful and most delightful practice, and while absent from his own house attending a severe and dangerous case of indisposition in the family of one of his best and most generous patrons, fell the victim of an attack of the "epidemic catarrh" or "influenza" as it is usually denominated. And it was not until by his skill and unremitting attention to the case in the family of his friend, during several days and nights, he had been enabled to conquer the fearful malady, that he stopt to address efficient means to his own. For a time, these as in a thousand cases which had yielded to his skilful and judicious management, seemed to give assurance of ultimate success. But it soon became manifest that the mighty destroyer would triumph over human skill and the best directed efforts of the healing art, and that little else remained for his medical attendants, than to behold the perfect calmness and philosophical resignation, which characterized him throughout his illness.

As a general reader, Dr. C. kept pace with the publications of the day, especially in his profession. And amid all the speculations, theories, and systems in medicine advanced in his time, he always reposed on the surer foundations of personal observation and practical experience. Most truly may it be said of him, that he was never the first to abandon an old remedy or plan of treatment, to try the new, however sustained by high names, and exalted by public applause. His uniform deportment towards his professional brethren, and to the sick committed to his care, obtained for him universal esteem, affection, and respect. His judgment was clear, deliberate, and peculiarly discriminating; and few ever fulfilled, with more conscientious rectitude, the various professional and relative duties and charities of life. Thus we have attempted a very brief outline of the character of our departed friend—not indeed sufficient, we confess, to show forth its true and striking features in all their strength and beauty. The means by which he attained his distinction and sustained himself at the head of the medical profession in the western district of our state, for thirty years, would naturally afford a subject for honest inquiry among the members of the medical profession. We have only to remark, that personal worth and professional merit, were his only passports to honour and celebrity. No hiring flatterers or fawning sycophants ever sounded the note of praise in his behalf—no newspaper puffings or exclusive claims were urged in his favour, to procure business or advance his professional standing. His peculiar *forte* was to *retain* business, rather than to acquire it. Would that the community generally understood and appreciated the true difference in these two opposite traits of the medical character.

The writer knew the subject of this obituary notice long and well—perhaps no one knows better than he does, the high and refined sense which Dr. C. entertained of professional etiquette and medical ethics. And it is believed, if all were to emulate his example, the unworthy would rarely be enabled to push themselves forward, where men of modesty, of worth, of learning, and of talents would fear to tread.

J. M'C.

'QUARTERLY MEDICAL ADVERTISER.

IN consequence of the extended circulation of the **AMERICAN JOURNAL OF THE MEDICAL SCIENCES**, the Proprietors intend, in compliance with the wishes of many of their Friends, to increase the facilities for advertising, hitherto possessed by it. For this purpose, a Sheet of Advertisements will be affixed to the succeeding Numbers of the Journal. All Booksellers, Medical Gentlemen, and others desirous of taking advantage of this mode of announcement, will please address their Advertisements to **CAREY & LEA**, Philadelphia, by the 10th day of the month preceding that of the publication of the Journal, viz. on 10th July, 10th October, 10th January, and 10th April.

TERMS.

For one page	-	-	-	-	-	-	-	Six dollars.
Half a page or less	-	-	-	-	-	-	-	Three dollars.

Philadelphia, January 20, 1830.

LECTURES ON ANATOMY, PHYSIOLOGY, AND OPERATIVE SURGERY,

Baltimore,

By, **A. L. WARNER, M. D.**

The subscriber will resume his course on Anatomy, Physiology, and Operative Surgery, on Monday, November 5th: to continue four months.

Lectures on General, Special, and Pathological Anatomy and Physiology, daily; with the privilege of the dissecting room, \$ 10 00.

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The utility of a thorough knowledge of the human structure to the medical student is too generally admitted to require comment, and this city affords more ample and extensive facilities for its culture than any other in our country.

Private pupils will be received at the rate of \$ 80 per annum, or \$ 40 for the winter term, payable in advance.

They will have the privilege of the Lectures, the use of a commodious office in the neighbourhood of the University, and a valuable Medical Library.

Regular examinations will be held upon the several branches of medical study.

Baltimore, May, 1832.

UNIVERSITY OF PENNSYLVANIA.

At a Medical Commencement, held in the Musical Fund Hall, March 29th, 1832, the Degree of Doctor of Medicine was conferred upon the following Gentlemen:—

	SUBJECT OF THESIS.
IRELAND.	
Matthew Anderson, . . .	<i>Scarlatina Anginosa.</i>
ALABAMA.	
John Stuart Peters, . . .	<i>Modus Operandi of Cold.</i>
Ambrose K. Ellett, . . .	<i>Acute Hepatitis.</i>
Algernon Sidney Harris, .	<i>Sprains.</i>
Wells A. Thompson, . . .	<i>Superficial and Suppurating Burns.</i>
NORTH CAROLINA.	
Thomas Mathews, . . .	<i>Menstruation and Conception.</i>
William S. Langley, . . .	<i>Blood-letting.</i>
Archibald S. Hall, . . .	<i>Hæmorrhoids.</i>
Henry Yarbrough, . . .	<i>Cholera Infantum.</i>
James Y. Thompson, . . .	<i>Scrofula.</i>
Alfred Plummer, . . .	<i>Coxalgia.</i>
Boaz Whitfield, . . .	<i>Bilious Colic.</i>
Turner Wilson, . . .	<i>Lobelia Inflata.</i>
Richard Cochran, . . .	<i>Cynanche Trachealis.</i>
William A. Evans, . . .	<i>Circulation.</i>
SOUTH CAROLINA.	
Randell Croft, . . .	<i>Intermittent Fever.</i>
James E. Nott, . . .	<i>Revulsion.</i>
Burwell B. Rudolph, . . .	<i>Uses of the Brain and Surfaces of Relation.</i>
William L. Felder, . . .	<i>Remittent Fever.</i>
Æneas M. Mikell, . . .	<i>Aneurism.</i>
CONNECTICUT.	
Isaac W. Russell, . . .	<i>Burns.</i>
DELAWARE.	
Franklin W. Clement, . .	<i>Ulcers.</i>
Herbert Morris, . . .	<i>Stricture of the Urethra.</i>
John Alexander Lockwood	<i>Poisoning by Arsenic.</i>
DISTRICT OF COLUMBIA.	
Charles Farquhar, . . .	<i>Lobelia Inflata.</i>
GEORGIA.	
M'Carrell Peurifoy, . . .	<i>Acute Hepatitis.</i>
Daniel C. M'Leod, . . .	<i>Trismus Nascentium.</i>
Algernon Sidney Brown, .	<i>Necrosis.</i>
J. Borrowghs Ponce, . .	<i>Phthisis Pulmonalis.</i>
James Y. Morel, . . .	<i>Theory and Mode of Treating Fever of Savannah.</i>
LOUISIANA.	
John M. W. Picton, . . .	<i>Exclusion of Light in Variola.</i>
John P. Davidson, . . .	<i>Yellow Fever.</i>
Stephen D. M'Neil, . . .	<i>Pathology of Dysentery.</i>
Thomas B. Percy, . . .	<i>Proximate Cause of Dysentery.</i>
MARYLAND.	
Thomas I. Snowden, . . .	<i>Inguinal Hernia.</i>
Henry A. Offutt, . . .	<i>Compression of the Brain.</i>
William Riley, . . .	<i>Acute Bronchitis.</i>
Thomas M. Williams, . . .	<i>Hæmorrhage from Wounded Arteries, with the Natural and Artificial Means of Arresting it.</i>
Edgar M. Gatton, . . .	<i>Luxation of the Humerus.</i>
Henry Hughes, . . .	<i>Intermittent Fever.</i>

MISSOURI.

SUBJECT OF THESIS.

Meredith Martin, . . . *Cholera Infantum.*

NEW JERSEY.

Thomas R. Clement, . . . *Pertussis.*
John Humphreys, . . . *Ardent Spirits.*
John Nelson Woodhull, . . . *Vaccination.*
Henry P. Welling, . . . *Fever.*
Andrew F. E. Mickle, . . . *Vegetable Alkalies.*

NEW YORK.

Anson Colman, . . . *Chronic Epilepsy.*
Stephen O. Almy, . . . *Epidemic Ophthalmia.*
Charles Augustus Porter, . . . *Hydrops Abdominis.*
Francis Lee Harris, . . . *Femoro-Coalgia.*
Frederick Giraud, . . . *Dyspepsia.*
Minturn Post, . . . *Tetanus.*
John H. Griscorn, . . . *Apocynum Cannabinum.*

PENNSYLVANIA.

Thomas Forrest Betton, . . . *Structure and Functions of the Placenta.*
John Spayd, . . . *De Manustupratione.*
James Francis Latta, . . . *Probable Cause of Intermittent Fever.*
William B. Taylor, . . . *Puerperal Fever.*
Richard M. Kendall, . . . *Pulmonary Consumption.*
William G. Knowles, . . . *Acute Hepatitis.*
Thomas S. Kirkbride, . . . *Neuralgia.*
Mifflin Wistar, . . . *Digestion.*
Samuel Bradford, . . . *Gastritis.*
Frederick Turnpenny, . . . *Pathology and Treatment of Epilepsy.*
Paul Beck Goddard, . . . *Anatomy and Physiology of Mucous Membrane.*
William C. Irwin, . . . *Medical Treatment of Retention of Urine.*
Edward Alex. Nassau, . . . *Injuries of the Brain.*
Isaac Parrish, . . . *Irritation of the Spinal Marrow.*
Alexander Shields, . . . *Life.*
Patrick Joseph Griffin, . . . *Intermittent.*
Francis West, Jr., . . . *Hepatitis.*
John Howard Ingram, . . . *Bronchitis.*
John R. Geddis, . . . *Ergot.*
Robert Caldcleugh, . . . *Inflammation of Mucous coat of Intestinal Canal.*
John W. Luther, . . . *Hæmorrhoids.*
Henry Koons, . . . *Dysentery.*
William Pepper, . . . *Apoplexy.*
David N. Scott, . . . *Prunus Cerasus Virginiana.*
Charles B. Ferguson, . . . *Intermittent Fever.*
Samuel Pollock, . . . *Tracheitis.*
John D. Ross, . . . *Cynanche Trachealis.*
Andrew Bush, . . . *Topical Depletion and Endermic Irritation.*
William A. Smith, . . . *Puerperal Fever.*
Charles B. Voight, . . . *Necrosis.*
Mark M. Reeve, . . . *Hæmatemesis.*
James Teas, . . . *Gangrænopsis.*
Thomas Davis, . . . *Acute Hepatitis.*
Samuel Hayes Harry, . . . *Compound Dislocations of the Ankle.*

TENNESSEE.

William W. Searcy, . . . *Injuries of the Head.*

VIRGINIA.

John Cyrus Mercer, . . . *Functions of the Fifth pair of Nerves.*
Joshua Morton, . . . *Blood-letting.*
Moses A. Levy, . . . *Dropsy.*

George Cobb,	<i>Retention and Suppression of the Menses.</i>
James F. Young,	<i>Acute Hepatitis.</i>
Daniel S. Green,	<i>Functions of Spleen.</i>
William S. Jeffries,	<i>Cholera Infantum.</i>
William D. Christian,	<i>Animal Heat.</i>
James M. Austin,	<i>Fever.</i>
Joseph V. Hobson,	<i>Delirium Tremens.</i>
Richard Scott Blackburn	<i>Delirium Tremens.</i>
George K. Birchett,	<i>Syphilis.</i>
Robert W. Lindsay,	<i>Physiology of Digestion.</i>
Francis T. Grady,	<i>Digestion.</i>
George N. Kennon,	<i>Sedative Effects of Tartrate of Antimony, and Acetate of Squills.</i>
William Henry Howard,	<i>Nature of Tuberculous Consumption.</i>
David Patteson,	<i>Phrenitis.</i>
William H. Twyman,	<i>Hepatitis Acuta.</i>
Francis H. Deane,	<i>Modus Operandi of Revulsives.</i>
Iverson L. Twyman,	<i>Acute Rheumatism.</i>
Baynham Baylor,	<i>Scarlatina.</i>
Clifford Cabell,	<i>Intermittent.</i>
Nathan Fletcher,	<i>Stricture of Urethra.</i>
William Baird,	<i>Acute Gastritis.</i>
William F. Alexander,	<i>Arterial Circulation.</i>
Samuel G. Henkel,	<i>Diseases of the Eye.</i>
Orlando S. Jones,	<i>Rheumatism.</i>
Leonard Henley,	<i>Menstruation.</i>
William Mills, Jr.	<i>Anatomy and Physiology of the Ganglionic System.</i>
Philip Turpin,	<i>Instrumental Labour.</i>
Thomas H. Venable,	<i>Cholera Infantum.</i>
Albert G. Wortham,	<i>Morbus Coxarius.</i>
Samuel Taylor,	<i>Cold.</i>
Thomas M. Jackson,	<i>Tetanus.</i>
Thomas L. Hunter,	<i>Malaria.</i>
Julius C. Branch,	<i>Cholera Infantum.</i>
Peter Field Gay,	<i>Bilious Remittent Fever.</i>
George Mason,	<i>Superficial Burns.</i>
William L. Gatewood,	<i>Cynanche Trachealis.</i>
Joseph Cowan,	<i>Gonorrhœa Virulenta.</i>
William R. Savage,	<i>Natural and Artificial Process of Stopping Hæmorrhage from Wounded and Divided Arteries.</i>
Valentine Y. Conway,	<i>Mania.</i>
Henry G. Jackson,	<i>Flatulent Colic.</i>
John L. Dixon,	<i>Importance of Symptoms.</i>
James H. Brander,	<i>Hydrocephalus Internus.</i>

The following gentlemen received the Degree of Doctor of Medicine at the Commencement in July, 1831.

James M. Perkins, Ten. . .	<i>Acute Dysentery.</i>
Eugene Palmer, Con. . .	<i>Pernio.</i>
Lewis S. Somers, Penn. . .	<i>Dyspepsia.</i>

TOTAL, 136.

WILLIAM E. HORNER, Dean.

THE
AMERICAN JOURNAL
OF THE
MEDICAL SCIENCES.

ART. I. *Remarks on the Autumnal Remitting Fever, as it appeared in Dallas County, Alabama, in the months of September and October, 1831.* By J. WIGGINS HEUSTIS, M. D.

AFTER a winter of unusual severity, spring at length returned, though tardy. The earth had been greatly chilled by the severity of the frost, so that it was late in May before the commencement of warm weather. Parts of June and August, and the whole of July, were unusually dry, and vegetation of every description was much injured by the severity of the drought, which was more sensibly felt in consequence of the plentiful supply of rain that had previously fallen, which, filling to exuberance with sap the growing plants, caused a proportionable degree of suffering, from a sudden suspension of their necessary aliment.

About the first of August the sun presented an unusual appearance, which was observed throughout the United States, and perhaps elsewhere. Soon after rising, and just before sitting, its aspect was singularly striking, being clear and pale, of a bluish-green complexion, much like a well-burnished pewter dish. Its beams, even at noonday, were peculiarly faint and pale; and, as cast upon the floor through a door or window, of a sickly blue and greenish hue. This phenomenon appears to have been owing to an unusual accumulation of vapour in the atmosphere. The most satisfactory explanation of this circumstance is contained in a communication from BENJAMIN HALLOWELL, of Alexandria, Va. dated August 20th, 1831, and published in the National Intelligencer of the 24th. As the phenomenon is of a rare and interesting character, and as being perhaps in some essential degree connected with the peculiarity of the season, and the salubrity and insalubrity of the

cient for all the purposes of health; but when the regularity of custom and habit were infringed upon and deranged by any error in the non naturals, or when the constitution was peculiarly susceptible, disease was liable to ensue.

The fever was mostly of the double tertian character, with paroxysms often protracted, and running into each other without any distinct intermission. In other instances, the single tertian type prevailed, but of greater severity than the ordinary fever and ague. In most cases the sensation of chilliness was slight, and after the first paroxysm almost imperceptible. In some, however, the disease was ushered in with a severe ague. In the majority of cases the patients complained of great pain in the head and back. The pulse was rarely full and strong, often hard and frequent, and in many cases small, weak, and easily compressible; and in persons advanced in life, intermitting, more especially under the operation of evacuants. The pain of the head was confined more especially to the forehead, where it was often distressing; becoming more aggravated during the exacerbation of the fever. But notwithstanding the severity of the pains in the head and back, the cases in general did not admit of the free and liberal extraction of blood.

The fever this season was of the congestive character, with a great disposition to an unequal distribution of febrile action and development. In many cases the head, and particularly the extremities, would be cold, while the trunk was hot; whilst at the same time there was considerable palpitation of heart, with a pulse small, weak, and frequent. In such cases I have known dangerous, and even fatal mistakes committed. This weakness of pulse and coldness of the extremities having been looked upon as circumstances of febrile remission, quinine has been exhibited and persevered in; but so far from putting a stop to the progress, or mitigating the disease, the symptoms have become more and more aggravated; the breathing short, anxious, and laborious, and interrupted with frequent sighing; the pulse, instead of becoming stronger, was rendered still more weak and frequent; the sighing and restlessness more urgent; and life was finally extinguished from over-stimulation.

Sickness, restlessness, and feelings of general distress were often the only, or the principal symptoms by which an accession or recurrence of fever could be ascertained. In other cases a weak and hurried pulse would be accompanied with an evolution of general increased temperature, with heat and dryness in the palms of the hands and soles of the feet, and an aggravation of pain in the head and back.

Sometimes after a transient state of febrile excitation, collapse

took place at an early stage of the disease, with little impairment of the general powers of the system; this was more especially the case where depletion had been too freely practised. It is necessary to make a distinction between this state of prostration and that which takes place at a more advanced period. The first is generally remediable, the second is not: in the former the prostration and collapse are for the most part confined to the vascular system, while such is the strength of the muscles of locomotion, that the patient is able to rise and sit up, and even to walk about. This disparity of strength and power between the two sets of organs also sometimes exists in the collapse which takes place towards the termination of the higher grades of bilious fever; and the more malignant the disease, the sooner is this state liable to ensue. This appears to admit of an easy explanation, on the presumption that as the fluids of the body are primarily contaminated, the strength and vitality of the heart and blood-vessels are sooner overpowered and subdued by the deadly poison that has been received into them. I have at this time, (Nov. 3d, 1831,) under my care a gentleman and his daughter, exemplifying this diversity of febrile action: in the man the heat and febrile development are general; in the child there is a great proneness to coldness of the extremities, with a weak, faltering, and almost imperceptible pulse. For the purpose of opening the bowels of the latter, I prescribed a moderate dose of calomel. After this had operated she was much relieved. * * Since writing the above the child has died. I had directed quinine to be given to her through the day, as she appeared to be quite free from fever, in order to resist the tendency to prostration. Under this treatment she improved. But a relative of the child, on the evening of the 3d, apprehending that the fever had returned, discontinued the quinine and administered a dose of castor oil. This I learnt on my arrival late the same evening. I did not think that her situation authorized its employment. The ensuing day, Nov. 4th, she became sick at the stomach, with a disposition to vomit. The relative of the child above referred to, endeavoured to encourage this by exhibiting a solution of tartar emetic, in broken doses; it failed, however, to have the desired effect. No vomiting was produced by it, but a cold clammy sweat broke out and exuded profusely from every pore. She became cold as marble, complaining at the same time of great heat. Arriving late the same evening I found her extremely restless, without pulse, clay-like, and dying, another victim to the administration of tartar emetic. So many instances have I known of like effects from the use of this dangerous article, that it is now several years since I have employed it as an emetic. The case above-mentioned, however, was

one probably of great malignancy; for previously to the administration of the tartar emetic she had vomited matter of a black and sooty appearance, and the whole vital system appeared to be greatly oppressed and overpowered. Besides, the dangerous illness of, and the absorbing interest for the father, caused the case of the child to be overlooked and disregarded by the family, considering it nothing more than a slight indisposition to which she was subject, until several days had elapsed, when she was found in the situation before described. The mother of the child, a woman of plain good sense, sentantiously remarked to me afterwards, "I have done with pukes."

It generally happens that our autumnal fever ceases as an epidemic about the 10th of October; yet the sporadic cases that occur subsequent to that time are of a more obstinate and malignant character.

Early in the season the discharges from the bowels were mostly of a light clay-coloured complexion, with very little black, green, or bilious discolouration, so generally remarkable in our autumnal epidemics. In the few sporadic cases, however, that occurred after the commencement of cool weather, the stools were highly coloured, of a dark green, olive, and almost black; becoming in the progress of the complaint, of a lighter hue, between an olive and a brown, and of a gelatinous, sleek, and oily appearance; but in no case peculiarly offensive. In one patient the stools were thin, watery, and of a sanguinolent, purplish hue, proceeding probably from a rupture of some small blood-vessels of the rectum or colon, occasioned by overaction and morbid stimulation of the bowels, an appearance I have several times observed. It is not, however, generally a dangerous prognostic, and may be removed by anodyne injections.

With the exception of the little girl alluded to before; only two persons have died within the sphere of my practice this season, and those were in a moribund state when I was called in, and expired in a few hours from the time I saw them. Both had been sick several days. One was an aged lady. The other a young married woman; the cold sweat of death was on her when I arrived at her residence; the face was cold and livid, the pulse tremulous and weak, and the whole system rapidly sinking; the taper of vitality was fast decaying, nor could it be revived by all the resources and remedies that were employed.

To these observations I beg leave to subjoin a few practical remarks. In a great proportion of cases the physician was never consulted; in others, medical advice was obtained, and the friends or family administered their own medicine; in others again the physician

was applied to for medicine and advice, and in a few of the more desperate only was his attendance required.

It was seldom that I was called in at an early stage of the disease. Domestic skill was generally resorted to in the first instance, which failing, the physician was applied to as a *dernier resort*. Emetics or cathartics, or probably both, had already been employed, and probably to too great an extent; so that the stomach and bowels being already in a state of commotion, and the patient frequently harassed with watery discharges by vomiting and stool, it became necessary to allay these inordinate actions.

As in former years, so in this, much injury was often done by the exhibition of tartar emetic; fortunately, however, the remedy is now, I believe, generally laid aside; though a few physicians still continuing to use it, cause it to keep up a limited credit and employment. The time, however, I trust and believe is not far distant, when this poisonous and dangerous article, as an emetic, will be discarded from among the medicines employed in the treatment of the autumnal fevers of our climate. When given even in doses of a few grains, I have known it to produce sudden, dangerous, and fatal collapses, and a persisting and uncontrollable catharsis, in consequence of the erythema and irritation excited in the mucous surface of the stomach and intestines. Given in minute quantities it is still valuable as a diaphoretic, the only manner and purpose in and for which I exhibit it.

I administered but one emetic this season, and that rather in compliance with the wishes and prejudices of the patient, than from my own views of its utility. It was a case, however, of chill and fever, of rather a mild and intermitting type, and little danger was therefore apprehended from the operation of a mild emetic. To use his own language, *as he wished something to turn it down after it had vomited him sufficiently*, I added to the ipecacuanha a sufficient quantity of jalap. The patient not being satisfied with the first exhibition, I repeated the dose, which, aided by copious draughts of warm water, acted effectually both as an emetic and cathartic. He remarked that he had taken ipecacuanha before, but never any that had operated so roughly. The fever subsiding with the operation of the medicine, left him in a situation to take quinine; about thirty grains of which restored him to his usual health. I had previously remarked, while in Florida, in 1818, the efficacy of emetico-cathartics in breaking up morbid associations, and putting a sudden check to fever if exhibited in an early stage of the disease. The articles I made use of were ipecacuanha, calomel, and jalap. In a great majority of

cases the fever was in this manner suddenly cut short by a single dose of medicine. For the same purpose the owners of slaves in this country are in the habit of giving to their negroes at the first announcement of disease, salts and tartar emetic combined. But it is seldom in country practice that the physician sees the patient sufficiently early to admit of this mode of treatment with any degree of safety. In a preceding number of this Journal, I have pointed out the danger of exhibiting tartar emetic, nor have I since had any reason to alter my opinion.

Notwithstanding the severity of the pains in the head and back, the cases in general did not admit of the free and liberal extraction of blood, or it was seldom that the physician saw the patient at a proper season to avail himself of its employment; and for the most part, the loss of four or five ounces was sufficient to produce a reduction and softening of the pulse. If the febrile action was considerable, with much head-ache, as there generally was, and a hot skin, bleeding was highly useful. But the quantity required at any one operation, was small, seldom exceeding eight or ten ounces; if the extraction went much beyond this, there was danger of sinking and alarming prostration. In this, there was a peculiarity, different from what existed in the fevers of former years, when I have known the pulse to remain firm after the loss of twenty or thirty ounces of blood. In one instance, the too free operation of bleeding had nearly proved fatal. This took place at the commencement of the sickly season, before the character of the epidemic was well understood. The case was that of a young, stout, athletic negro man, full of life and blood, but in whom the arterial action was not in proportion to the habit of body, and the other symptoms of the fever. The pulse, instead of being full and strong, or hard, vibrating, and elastic, was, on the contrary, rather small and contracted, indicating a congestive state of fever. I opened a vein, though on the third day of the disease, and without much alteration of symptoms, permitted the blood to flow until nearly twenty ounces had been extracted. Finding that no disposition to syncope or perspiration was produced, and that the trunk still continued preternaturally warm, I gave him the cold bath, seating him on a chair, and affusing with a small pitcher, about four gallons of cold well water on the naked body. He was now cool, and being conveyed to bed, expressed himself much relieved. I now gave him about twenty grains of calomel, with directions to exhibit a dose of castor oil, should not the calomel operate in the course of three or four hours; I then left him to visit other patients: returning in about three hours, I was startled to find him labouring under a

state of extreme arterial prostration. His system had not reacted from the effects of the cold bath; and the castor oil, which had been exhibited too soon, together with the calomel, had already produced profuse and repeated dejections from the bowels. The extremities were cold, the countenance inanimate, the voice and consciousness nearly extinct, and the pulse thread-like, evanescent, and only perceptible to the most accurate and delicate touch. Without delay I applied blistering plasters to the extremities, made frictions with hot brandy, gave him an anodyne to check the operation on the bowels, and stimulated him with quinine, exhibited every hour; sinapisms and poke root poultices were subsequently applied to the soles of the feet and to the palms of the hands. This case remained critical and doubtful for several days; reaction however ultimately took place, with an accession of fever, which was combated by febrifuges and aperients, and the man recovered. The error in this case consisted in making too full and liberal extraction of blood, without, as yet, being sufficiently acquainted with the character of the epidemic; the paying too little attention to the state of the pulse, which, though the patient was of a strong and athletic habit, did not possess sufficient development and force to authorize the free use of the lancet. Yet, here again I was imposed upon; for, as the patient was bled sitting up, and as no disposition to syncope took place, with but little change of the pulse or other symptoms, the extraction was considered within the bounds of prudence. A second error was, in making too free use of the cold bath; and the third in following up these two Herculean remedies, by exhibiting a twenty grain dose of calomel; the latter, however, might not have been injurious, had it not, contrary to my directions, been succeeded too soon by the exhibition of a large dose of castor oil.

The uncertainty, and the diversified effects from the operation of blood-letting, show the impropriety of trusting this efficient remedy to any other than the hands and discretion of the attending physician. Much danger is to be apprehended from the mechanical operator, who, ignorant of the animal economy, and of the phenomena of health and disease, can have no proper conception of the circumstances, necessities, and changing symptoms of the patient, which govern and regulate the use of this important operation. Nor is it possible for the physician to decide, from the symptoms merely, the effect that may be produced, or the degree to which the extraction of blood should be performed. In the use of the lancet, I have always found it necessary to watch the patient with much care and attention, to ascertain the extent which may be required. Suppose, for instance,

recourse to venesection, previously to a repetition of the bath, which may then be given, should not the bleeding have had the effect of superseding its necessity with every probability of success.

When the increased temperature was only partial, as was frequently the case, being confined to the head and trunk, whilst the extremities were colder than natural, the general cold bath was not admissible; at least I have never employed it under these circumstances. In such cases cloths wet with cold water were beneficially applied to the head, chest, and abdomen. For this purpose I made use of large towels, or two or three of them together, and folded several times, so as to prevent their becoming too soon heated. These were renewed every fifteen or twenty minutes, or as often as they became warm, until the heat became permanently reduced to the natural standard, or a perspiration made its appearance. This plan is also adviseable in those cases where the general cold bath might be objectionable on account of the existing debility of the patient. When there was an undue accumulation of heat in the extremities, as was not unfrequently the case, great relief and benefit were derived from sponging or wetting them with cold diluted vinegar, or what was preferable, lime juice and water.

With respect to the exhibition and utility of quinine, in cases of well-marked intermitting fever, there is no question; but in the bilious remittent great care and circumspection are required in its employment. The physician is here often compelled to witness from day to day, the wasting ravages of disease slowly or more rapidly undermining the strength and constitution of the patient, without the power of arresting its progress. It seldom happens, however, that a remission more or less considerable, does not take place, at least once in the twenty-four hours; this is known by the reduced hardness and frequency of the pulse, the cessation of head-ache, and the distressing thirst and dryness of the mouth, by a state of comparative ease and composure, and perhaps by the appearance of a perspiration. This, then, is the critical and important period for exhibiting quinine. A perfect apyrexia is not to be expected; but if, as often happens, the quinine produces a perspiration, which it does more effectually if aided by the exhibition of spirit of nitre and antimonial wine, with an infusion of serpentaria or sassafras; if in this manner general perspiration is produced and kept up, we may be satisfied that the exhibition is safe and proper. When the remission is short, lasting no longer perhaps than one or two hours, it becomes necessary to push the remedy with a bold and vigorous hand. Under such circumstances I have often given as many as five grains every

hour, either in substance or solution, until the system has become well charged, which may be known by a sense of fullness of the head, and twitchings and transient sensations of numbness in the muscles of voluntary motion; it then becomes necessary to desist for a few hours, when it may be again renewed in smaller quantities and at more distant intervals, still keeping the system charged for a day or two, until the morbid action shall be completely subdued. During its exhibition the perspiration may be encouraged by the simultaneous exhibition of the remedies above-mentioned. In this way I have often arrested the most dangerous and alarming cases of bilious remitting fever, in which fatal consequences were apprehended from a repetition of the paroxysm. If, however, after one or two exhibitions of this medicine, it should be found that the febrile symptoms become aggravated, without the appearance of perspiration, we must desist from its employment for the present, and watch for a more favourable opportunity. During the exhibition of this powerful tonic, the pulse will possess much of the character of febrile excitement, being quite frequent or rather quick and jerking; but there is at the same time an absence of other febrile symptoms, as thirst, head-ache, a hot and parched skin, &c. This frequency of pulse under the exhibition of quinine in the bilious remittent, is partly the remains of fever, and partly the effect of the medicine employed, and may be considered as the struggle between the disease and its remedy. When this shall have been overcome, the pulse will resume its firm, slow, full, regular, and healthy beat. At the commencement of the disease I have been often foiled in my attempt to exhibit quinine, there being present too great a degree of the inflammatory diathesis. It becomes necessary, therefore, previously to correct this state of the system, by the employment of the usual remedies, as venesection, should the symptoms justify it, cathartics, the cold bath, and other febrifuges. Watching the favourable opportunity for a remission, we may then have recourse to the exhibition of quinine, with a great probability of success. I would here beg leave to remark the frequent complaints and objections made against this valuable article of the *materia medica* by some respectable physicians, who contend that its virtues have been greatly over-rated, and that they have never been sensible of any considerable advantage from its use. Similar objections were at first raised against the parent article, the Peruvian bark itself, and from the same cause, viz. the small and insufficient quantity employed. The cost of this medicine, hitherto, has proved a great bar to its extensive and general employment, especially among the more indigent classes of so-

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ciety, and an overstrained economy in the attending physician has caused it to be administered in such minute quantities that it might well be said to be inert and unavailing. Thus, it is thought by many that five grains to the ounce in solution, exhibited in the dose of a tea-spoonful every two hours, is amply sufficient. This would make but little more than half a grain to a dose; scarcely more than the tenth part I have found it expedient and necessary to exhibit, in combating such obstinate and formidable diseases as the intermitting and remitting fevers frequently are.

An objection exists with many physicians against the use of opiates in fever, and it is doubtless true that their indiscriminate exhibition in cases of high arterial action might be productive of injurious effects; this, however, affords no argument against their occasional and judicious exhibition; and I have accordingly found them amongst the most valuable remedies that can be employed. It is often desirable to procure ease and composure, and a respite from the harassing restlessness and vigils of disease. For this purpose I often prescribe at bed time, provided the fever should not be very considerable, a tea-spoonful of paregoric, and the same quantity of spirit of nitre, with fifteen or twenty drops of antimonial wine, to be repeated if necessary. So far from stimulating the arterial system, and aggravating the fever, I have found this prescription one of the most effectual remedies in subduing the remains of febrile restlessness and excitement; which it appears to accomplish by its anodyne power, and by promoting perspiration, which latter property it possesses in a more eminent degree than any other medicine or combination of medicines that I have ever employed.

The disease this season was not generally marked by any considerable irritability of the stomach; yet in those few cases where this took place, blistering the epigastrium was of great service. Abstinence from all kinds of ingesta, either in the form of drink or nourishment was also required. For want of attention to this circumstance, I have known the irritability of the stomach and the vomiting to continue with great obstinacy. It is in vain, under such circumstances, to endeavour to quell the disturbance by carminatives, aromatic infusions, &c.; every article of bulk becomes a cause of offence to the irritable organ, and is sure to be rejected in a few minutes from the time of its reception.

On the morning of the 27th of September I was called to visit A. R. a very large and fat elderly gentleman. I found him with a strong full pulse, and great irritability of the stomach. The strength and fullness of the pulse were rather remarkable, as in persons of much

obesity I have generally remarked it to be small and weak. The person here spoken of, however, was of a strong constitution and industrious and active habits, which might account for the difference. He had been subject to the remitting fever for several days. When I saw him he was labouring under symptoms of cholera. He had great thirst, and such was the weakness and irritability of the stomach that every thing was thrown up almost as soon as it was swallowed, so that the floor of the room where he lay was inundated with the water that he had rejected. I administered a bolus composed of one grain of opium, three grains of camphor, and ten grains of calomel; at the same time I had his stomach well rubbed with hot brandy and laudanum, and then a flannel cloth wet with the same, and applied to the epigastrium. I prohibited the use of both liquids and solids, except in very small quantities. In pursuance of this treatment the stomach soon became composed. In the evening, finding the pulse too full and strong, I took away about sixteen ounces of blood. After the lapse of about eighteen hours I allowed him to chew a little lean boiled ham, and to swallow the juice, which he did with some relish and much benefit; I also permitted him to take from time to time, as his stomach could bear it, two or three tea-spoonsful of strong coffee. Quinine was likewise exhibited every two hours in such quantity as his situation would admit. Under this treatment he rapidly recovered.

In desperate cases it will often be necessary for the physician, in some degree at least, to become also the officiating nurse and constant attendant, as no other person is competent to adjust the treatment to the various changing symptoms and necessities of the disease. In critical circumstances, where life and death stand almost on an equal balance, a slight error is sufficient to turn the scale, to the irretrievable destruction of the patient.

Cahaba, Alabama, Dec. 1831.

ART. II. *Account of the Scarlatina which prevailed in Deerfield, Massachusetts, in the years 1830 and 1831.* By STEPHEN W. WILLIAMS, M. D. late Professor of Medical Jurisprudence in the Berkshire Medical Institution.

IN the years 1830 and 1831 scarlet fever prevailed extensively throughout New England, and in many towns was very mortal. At intervals

it has continued to prevail from June 1830 to this time, Nov. 24th, 1831. The first cases I heard of occurred as early as May, 1830. The winter of this year was not unusually cold. The month of April was remarkably serene and mild; May was cold and uncomfortable; several frosts occurred which cut down the early planted Indian corn. The first cases which occurred in this town were in the latter part of June. A child was brought here from Amherst, where the complaint prevailed, who had considerable canker about the mouth and throat, but who was not supposed to have any thing of the complaint which prevailed there. In two or three days a child who played with this, was attacked with soreness of the throat, canker and fever, which were so slight as not to require medical aid. In about a week, the mother, who was subject to cynanche tonsillaris, was attacked, and sent for me. I found her with high fever, enlarged and inflamed tonsils, and furred tongue. Believing her to have an attack of inflammatory quinsy, I made my prescription for that complaint, and did not see her again for five days. When I next visited her, I found two of her children, a boy of about fourteen, and a girl of about eleven years of age, labouring under the same complaint. They had been sick a day or two. They were attacked with cold chills, succeeded by great heat, inflamed throats, and swelled tonsils, and, at the time I saw them, they complained of great lassitude and depression of strength. Upon examining the tonsils of the mother and children, I found them covered with white specks of ulceration, but still they were so much inflamed that I considered them cases of cynanche tonsillaris, having often seen such specks in inflammatory quinsy, previous to suppuration. In the case of the boy the pulse was very slow, and often preternaturally so. The pulse was smaller and quicker in the other two. On visiting them the next day I found that the sloughs had extended over the palate and fauces, and were more of an ash colour. The difficulty of swallowing was very great, so much so that liquids frequently returned through the nose. In the children there were copious discharges from the nose, of so acrid a character as to excoriate the skin. Restlessness and delirium at night. The complaint ran on a fortnight before the fever subsided, and it was more than a month before their throats were entirely well; indeed, there was great hoarseness and difficulty of swallowing for several months. The ulcers nearly destroyed the palate, and made great ravages with the tonsils, which were very ragged, and resembled honey-comb. I have been rather particular in describing these cases, as many of my subsequent ones were similar to them.

One of the watchers took the complaint from these patients, and

ried it home with her a distance of half a mile, and communicated it to her sister. Few other cases occurred for several weeks in this town, though, it was very prevalent and fatal in some of the neighbouring towns. In several instances the patients were attacked, and died with it in two days. These cases, however, were attended with eruptions, which did not occur in any of the patients I had previously seen.

Ten or a dozen cases of scarlatina occurred in Greenfield, three miles north of this town, but none were fatal. Sore throats were unusually common in this town this season, and many of them terminated in genuine cynanche tonsillaris. In different parts of the town, and at distant intervals, the complaint prevailed, and ran through several families. But one patient died of it in 1830, and he was sick only thirty-six hours. In this case I was told there was a slight eruption, which was the only instance in which it occurred here. I did not see this patient until within three hours previous to its death, and I am not able to give a detail of the treatment.

The measles prevailed in scattered cases, but could hardly be considered epidemic. A few cases of throat distemper occurred here as late as November.

We had no more cases of the complaint till the latter part of January, 1831. I find by my meteorological journal, that the weather up to the 6th of January had been remarkably warm. A part of the time had been very sultry, and the thermometer had been 55° above zero, a temperature for the season unprecedented within the recollection of the oldest inhabitants. After the middle of the month it was very cold, with considerable snow. The thermometer after this was eight different times below zero, once 17° below. February was also cold, there was a good deal of snow on the ground, and the thermometer this month was eight times below zero, and once 17° below. I find the following case of scarlatina in my note-book. On the 28th of February, 1831, a child of L. P. died of canker-rash, aged six. I was called to this child on the afternoon of the 27th, Sunday. It was taken violently sick on the Thursday before with a putrid sore throat, high fever, and scarlet eruptions. The usual common applications were used by the family before I saw it. I found it with an extremely feeble, rapid pulse, throat and mouth filled with very putrid and offensive smelling ulcers, and the skin hot and dry, and covered with scarlet miliary eruptions. The discharges from his mouth and nose were very acrid, and nauseous in the extreme, excoriating the skin wherever they touched. I pronounced the case a hopeless one. I gave it a dose of castor oil, di-

rected an antimonial solution, to use the static limonium both for a draught and gargle, and to use gargles of a solution of chloride of soda. The next morning before sunrise I was again called to it, but before I arrived the child was a corpse. This is the third case of canker-rash to this date which has proved fatal in this town this year. Many scattering cases have occurred in various parts of the town since last fall. In Conway, and some other of the neighbouring towns, it has been very prevalent and fatal. The complaint this year has generally been attended with an eruption, sometimes of the miliary kind, and sometimes it has appeared in blotches like erysipelas, constituting genuine canker-rash. I was deceived in one case, and supposed it to be genuine erysipelas, as there was, but little affection of the throat. Soon other members of the family were attacked with scarlatina, which convinced me that I had made a wrong prognosis. The complaint has, however, assumed all appearances, from the mildest to the most malignant forms. Frequently there would appear a great crop of eruptions without any affection of the throat, and often considerable soreness of the throat and stiffness of the muscles of the neck without any eruptions. I have generally found that where the eruption made its appearance soon after the throat was affected, especially if it was of the miliary kind, and appeared first in the superior parts of the body, and by the third day disappeared at the lower extremities, that my patients recovered better and quicker than when the eruption was four or five days in making its appearance. When this latter state has been the case I have often considered their situation dangerous and alarming, attended with high fever, quick and feeble pulse, and delirium; and where the cases have not been fatal they have been extremely slow in recovering.

There were two fatal cases in March, and one in April. The complaint arrived at its acme in May. In this month there were five deaths—four of them occurred in one day. In one small village, (Cheapside,) almost every child was affected with it, and there were six or seven deaths in rapid succession there from it.

From my note-book I find that scarlet fever, sometimes attended with canker, and sometimes not, continued to prevail to the 13th of June in various parts of the country. The weather from the 29th of May to this time has been unusually and intensely hot for the time of year. The thermometer was over 90° in the shade the two last days of May, and the four first days of June it ranged from 92° to 96°. Up to this time it is very hot and dry. The month of May was very cold and wet, and during this canker-rash prevailed

extensively here. As the weather grew milder the cases were numerous, but mild. No death from that or any other complaint occurred in this town from the 16th of May to the 13th of June. From what I can learn, I believe the complaint is, and has been, pretty general throughout a considerable portion of the United States. I have seen an account of its great ravages at Pittsburgh, beyond the Alleghanies, and of its prevalence in Burlington, Vermont.

From the 1st of May to the 1st of October the whooping-cough prevailed here very extensively and severely. No deaths occurred from it. From that time to this, scattering cases of scarlatina occurred—and we have now, November 24th, one or two very severe cases. Since the commencement of sore throat in this town, we have had about two hundred and fifty cases, and sixteen deaths from it. The population of Deerfield is a little more than two thousand. The average number of deaths in this town for the last twenty years has been about twenty a year. This year, up to this time, there have been forty-three deaths—many of them have been from chronic complaints. .

Treatment.—In the treatment of this disease I have probably used nothing new. At its commencement, my cases were unquestionably inflammatory quinsy, but they soon terminated in the putrid form of the malady. My first cases were treated with cathartics of calomel, followed with jalap and crem. tartar, ol. ricini, senna, aniseed, and glycyrrh. or with neutral salts. Purgatives have always had a good effect at the commencement, and where they have operated well have obviated the necessity of local or general blood-letting. In a few cases I have prescribed emetics, but have not seen the same benefit from them as from cathartics. After the operation of the latter I have made free use of Dover's powder and calomel, diaphoretics generally, and the antiphlogistic regimen; pediluvium and sinapisms to the feet, and mustard-seed poultices, blisters, vinegar and water, and volatile liniment applied externally to the throat, appeared to lessen local inflammation. Inhalations of the vapour of sage tea and vinegar from the nose of a coffee-pot, gargles of gold-thread, alum and honey, borax, slippery-elm, and solutions of chloride of soda, and decoctions of marsh-rosemary, were beneficially applied to the internal fauces and tonsils. The frequent use of dilute muriatic acid in water was of great service. It is thus prepared:—
R. Acid. muriat. gtt. xl.; aq. bullient. ℥ss.; mel. coch. mag. 3. I direct the patient to take a large spoonful of it every four hours, and gargle the mouth and throat with it frequently. It has a good tonic

effect in the convalescing stage. This medicine is highly extolled by several English physicians in this complaint. I have used it with much advantage in mercurial sore mouth, and in cases of canker. The decoction of statice limonium \bar{z} ss. to \bar{h} ss. of boiling water, a table-spoonful at a dose several times a day, was an excellent tonic and detergent.

To correct the fetor of the breath I made a free use of the chloride of soda, in the proportion of one table-spoonful to ten of water, for a gargle and wash. I also use this medicine extensively in mercurial sore mouths. In the convalescing stage generous diet was resorted to, the sulphate of quinine, bark and wine, decoctions of serpentaria, chamomile, carriage exercise, &c. &c. These were general remedies, which were varied, and others substituted according to the circumstances of the case.

My patients were slow in recovering, and for several weeks many of them had great difficulty in swallowing; liquids returning through the nose, and great hoarseness. I ought not to have omitted to mention the great benefit my patients received from frequent ablution, and sponging the body with vinegar and water in a tepid state when the skin was hot and dry, and the grateful sensations experienced from fomenting the bowels with warm cider brandy.

Secondary affection of Scarlatina.—In numerous cases there have been relapses from scarlatina, and the patients have sunk under dropsical effusions. In most of the secondary affections I have seen, the complaint was originally very mild, and perhaps little thought of at the time. From slight causes, such as taking a little cold, or over-eating, the patient is suddenly taken with universal bloating, and general dropsical effusions. It soon runs on very rapidly, most generally to death. I have seen some cases where the affection has been general from external and internal hydrocephalus, to general anasarca. I have seen the face of one patient so much bloated that he could not see. The warm bath, hydragogue cathartics, and diuretics ultimately restored him. I have also seen patients die from this complaint in the most agonizing distress. In my opinion, in these cases, the patients are too much neglected at the commencement of the complaint. Thorough evacuations should be resorted to, the avoidance of cold and the too free indulgence in eating. Patients in this complaint are very much debilitated. Tonics are urgently required.

CASE.—A child of D. A. aged three years, died of the secondary affection of scarlatina. About a month before this child was slightly

affected with scarlatina, which yielded to common remedies. In about ten days he was attacked with a secondary affection of the complaint, with slight rigors, high fever, a furred tongue, and bloated bowels. These symptoms also yielded, after a while, to purgatives, antiphlogistics, and tonics. After this he was about the house apparently as well as common, for several days, when, in consequence of over-eating, and taking cold, he was severely attacked with high fever, and great tumefaction of the bowels, and a brown, furred tongue. A full course of purgatives, Dover's powder and calomel combined, seemed to have a good effect upon him for several days, and we had expectations of his recovery, when suddenly he was attacked with delirium, stupor, and great distress. The pupils of his eyes did not appear to be affected, and we could not refer his complaint to his brain. The warm bath did not appear to alleviate his complaint. He lived several days and died distressed. We had no examination by dissection—unfortunately a prejudice exists against it in this quarter. About the same time Mr. A. had two other children, severely afflicted with the secondary affection of canker-rash which yielded to purgatives, Dover's powder and calomel.

The secondary affection of canker-rash has been common in the neighbouring towns, as well as this. It is generally fatal, but not invariably so. In one case to which I was called in consultation in Conway, the child appeared to be universally dropsical. Stupor and delirium came on before I saw it, and it was apprehended it would immediately die. It was so œdematous that it could not open its eyes, and it was white like bleached wax. The warm bath brought on reaction before I arrived, and a course of diuretics, purgatives, and tonics, finally restored it. In another case, a child, which had a few weeks before a slight affection of scarlatina, and which soon apparently recovered, in about a fortnight or three weeks after, it was suddenly attacked with fever and universal œdema. Extreme distress very soon followed, and in three days it died in excruciating agony, and the whole body was completely dropsical.

During the prevalence of this complaint it is frequently asked, can nothing be done to prevent it? Various remedies have been used, and the following from the *Journal Complimentaire*, deserves further trial. "*Belladonna*. The alleged preventive properties of this article in cases of scarlatina induced Dr. VELSEN of Cleves to test its efficacy in an epidemic which prevailed in that place during the past year. The number of those to whom it was administered amounted to 247, of both sexes, and of every age, from infants at the breast, to adults

of forty or fifty years. Two grains of the extract were dissolved in two ounces of distilled water, to which was added two drachms of alcohol, and of this solution five, ten, fifteen, or twenty drops, according to the age of the person, were taken twice a day. The administration of the medicine was continued during the prevalence of the epidemic. Of the 247 who were the subjects of the experiment, thirteen only contracted the disease, and, in them, according to Dr. Velsen, it assumed a milder character than in those who were not submitted to this preventive treatment. The following are the conclusions, which he has drawn from his observations. 1. In the great majority of cases the belladonna is a preventive against scarlet fever. 2. Where it fails to produce this effect, the disease is much milder than in cases where it has not been given. 3. Administered according to the preceding formula it is productive of no unpleasant consequences."

Deerfield, Massachusetts, Nov. 24th, 1831.

ART. III. *Case of Diseased Spine.* By THOMAS SEWALL, M. D. Professor of Anatomy and Physiology in the Columbian College, D. C. [With a Plate.]

THE following case of spinal affection occurred in the infant son of M. E. Hersant, Esq. Consul of France to the United States, a child equally remarkable for the premature development of his mind, the native stamina of his physical constitution, and the patience with which he sustained the extreme sufferings occasioned by a complicated train of morbid affections.

The case did not come under my care until a late period of the disease; I therefore avail myself of the notes which were made by Madam Hersant, and which she has kindly put into my hands for the benefit of the public. I am happy to find her journal of the case so full and circumstantial as to furnish every fact at all material in giving a faithful detail of its history.

Alexander, the little patient in question, was born in March, 1827, and was a healthy, well-formed child. At the age of two weeks, he was severely affected with the thrush, from the consequences of which he did not recover for nearly nine months, but upon the approach of the first winter, his health returned and he became vigorous and ro-

Dust. In July following he contracted a catarrhal affection, which left him with a febrile habit, that continued till late in the autumn; and the winter in 1829, found him a great invalid, affected with sleepiness, flushing, fever and diarrhœa, and this state continued till he was removed to Georgetown in September. Soon after this period, he was seized with occasional turns of vomiting, accompanied with a febrile habit, a dry cough and with indigestion. About the same time also, it was remarked, that he had acquired the habit of raising his body erect, or of throwing it backwards, as if to relieve some uneasy sensation; and that he was losing in some degree the power and activity of his lower extremities, evinced more especially by stumbling as he walked; but late in the autumn, his general appearance was improved and he enjoyed comparatively good health for two or three months. Early in February, 1830, it was observed for the first time, that he manifested uneasiness from the exercise of riding in a carriage, and that he could not endure being jolted upon the knee, or lifted by the arms. On making an examination to ascertain whether there was not some strain or dislocation which would explain the embarrassment under which he laboured, a small protuberance was discovered over the spine. About this time a great irritation of the bladder occurred, accompanied with pain, a frequent desire to void urine, and a shuddering when it was discharged; this affection increased in its severity to the close of life. About the same time the abdomen became tumid and tense, and his sufferings were augmented by an attack of the measles, then epidemic in the city, which left him with increased debility, cough and fever.

In March, 1830, I was called upon to give my opinion with respect to the nature of the tumour upon the back. Upon examination, I found the spinous process of the superior lumbar vertebra slightly projecting with a small but obvious curvature of the spine. There was tenderness from pressure over the projecting part in its neighbourhood, and his motions seemed to be restrained, feeble and tottering. There was also evident marks of hectic irritation. The nature of the case was too obvious to be mistaken and I did not hesitate to pronounce it an affection of the spine, and one which would result in a caries of the vertebræ, and in an extensive deformity, if not in death, unless arrested in its progress.

With respect to the treatment, it would be both tedious and unsatisfactory to trace it through the various changes of a case so protracted and complicated. I would only observe in reference to the spinal disease, that issues were introduced on each side of the affected vertebra, in May, 1830, and other topical and general remedies were

used. Still the disease advanced with a slow, but steady progress, evinced by the increase of fever, loss of appetite and strength, emaciation, irregular bowels, paroxysms of spasmodic pain, enlargement of the abdomen, and increased curvature of the spine.

In October, 1830, the little patient was taken to Philadelphia, and placed under the care of Dr. JOHN K. MITCHELL, a gentleman to whom our country is largely indebted for his extensive investigations, and successful method of treating this most formidable disease.

When the patient was first placed under Dr. Mitchell's care, he was suffering under the pressure of a severe hectic, accompanied with a tumid abdomen, and diarrhœa, of which the discharges were purulent. The pus appeared like that which usually escapes from strumous cavities and was supposed to come from an abscess connected with the carious vertebra. His appetite was feeble, his respiration hurried and irregular, his skin unequally active, his muscular strength almost entirely gone, and his motions even on the bed to which his debility confined him, were painful. From a belief that issues are often injurious in exciting and keeping up hectic irritation, an opinion, says Dr. Mitchell, derived from long observation, they were closed as soon as possible. To correct the irritated state of the intestinal action, a small blue mass pill was given every evening, and the diet was rendered as simple as possible. But as no visible improvement followed these measures, the little patient was subjected to the use of the spine-cart, a remedy which has given signal relief in many cases of painful caries of the spine, detailed in the communications of Dr. M. already before the public. Its application was quite as beneficial as anticipated. To use the language of the observant and intelligent mother, the swelling of the abdomen subsided, the pains left him, the fever abated, and the discharges became in other respects healthy, although the purulency was not materially diminished. These changes took place in three days after the application of the spine-cart. At the end of six weeks, his whole appearance was so much improved as to afford a rational hope that the patient might finally attain health and a solid spine. When he arrived in Philadelphia, it was necessary to avoid the slightest jolt; but before his departure for Washington, he rode about the streets of Philadelphia, without making any complaint. The weather on his journey homewards was both wet and stormy, and the necessary exposure brought on a severe catarrh, with fever and pain, attended with a loss of appetite, and a diminution of flesh and strength. But in the beginning of January, 1831, these symptoms abated and he began to recover his appetite and flesh, and his bowels became more regular, although the passages were still

charged with pus. From the time he returned from Philadelphia, at which period he first became my patient, the spine-cart was applied from three to five hours daily for several weeks, and with evident benefit; but in the early part of March, he was again affected with cold, which brought on a return of all his unfavourable symptoms with increased violence, and from this time the use of the cart was necessarily abandoned. The fever returned, accompanied with loss of appetite, thirst, fatigue of the lower extremities, great debility and sleepiness. • The discharge of pus from the bowels became more copious; the urine was also rendered turbid by its presence, and deposited large quantities of matter when cold. He continued to linger, becoming more and more exhausted, till the 12th of July, when he died in a state of extreme emaciation. •

Post mortem examination.—Twenty-four hours after death, I made a careful examination of the body, in presence of Drs. WASHINGTON and BÖHNEN, and discovered the following appearances:—On laying open the abdomen, the liver, spleen, and small intestines alone, were found in a healthy condition. The large intestines, in their whole extent, were thickened and changed in their organic structure, being contracted in some parts, and enlarged in others; with their different convolutions, where they came in contact, firmly adhering. The whole of the mesentery was thickened, and its glands enlarged to the size of grapes. The pancreas was also slightly enlarged and diseased in its structure. The left kidney was in a healthy state, but the right was enlarged to four times its natural size, with its ureter irregularly dilated to three-fourths of an inch in diameter, its coats the fourth of an inch in thickness, and of a cartilaginous hardness. The bladder was diminished in its capacity, and distended with urine and pus; its coats were thickened, hard, and elastic, and its mucous surface studded with small, white tubercles. Behind the peritoneum, and in the direction of the right psoas muscle, we found a mass of caseous matter, extending from the diseased vertebra to the right sacro-iliac junction. The large intestines contained a considerable quantity of pus, and a communication was found to exist between the diseased vertebra and the arch of the colon, where it crosses the spine, by which the matter made its way into the cavity of the intestines. On removing the intestines, a greater part of the bodies of the two superior lumbar vertebra, with the intervening cartilage, were found destroyed by the disease and the vacuity created by the caries filled with pus. When the matter was washed away, the spine presented the appearance exhibited in the accompanying drawing.

• Fig. 1. Shows the spine as straightened to its natural condition.

• No. XVIII.—Feb. 1832.

Fig. 2. Shows the spine as curved in sustaining the superincumbent weight of the body.

Observations.—In reviewing the foregoing case, the following observations seem naturally to present themselves to the mind.

1st. The importance of an early attention to the premonitory diagnostic symptoms of spinal disease, in order that the appropriate remedies may be applied before caries or curvature take place, for it is in this early stage only, that medical treatment can be relied on with confidence. Whenever, therefore, fever becomes chronic, or is obstinate, without the detection of an adequate cause, the vertebræ should be carefully examined by pressure. If no tenderness be discoverable, we may safely infer the absence of spinal irritation, unless the frequent and soothing motions of the spine, the often sought recumbent posture, and the shuffling gait, determine the application of remedies to the spine, even though no tenderness be discovered by pressure.

2d. The immediate and complete relief from pain and other unfavourable symptoms by the suspension in a spine-cart, while a recumbent posture did not abate one morbid symptom, shows that the state of entire rest and horizontal position, so strongly insisted on by the highest medical authority, is not entitled to unqualified approbation, and that these two apparently opposite modes of cure demand a fuller experimental investigation.

3d. That although a single case cannot be quoted as adequate testimony in favour or against any particular mode of treatment, yet the unabating progress of the disease while under the application of issues, a remedy also established by long usage, and advocated by high authority, while an arrest of the disease was effected by a remedy less painful, and better adapted to the undisciplined years and tender condition of the sufferer, should cause the profession to pause and to reconsider well the propriety of their application.

ART. IV. *Reports of Cases of Injuries of the Head, treated at the Pennsylvania Hospital.* By G. W. NORRIS, M. D. one of the resident Physicians.

CASE I. *Compression of the Brain from effusion of blood into the Ventricles.*—A labouring man was brought into the hospital in November, 1830, with an injury of the head. The account given by the

persons who brought him, was, that two hours before a large tackle block had fallen from a height of eight or ten feet and struck him upon his head—that after a few minutes he got up apparently but little injured, and walked from the vessel on board of which the accident happened to the wharf, where he sat down and conversed with the persons around him—that after about an hour he began to be stupid, which state increased gradually till it ended in insensibility.

When admitted he was completely insensible, with both pupils strongly contracted—his pulse was tense and his breathing slightly stertorous.

His head was shaved and examined, but there was no external wound, and no depression of bone could be perceived, but there was great effusion of blood beneath the skin.

Previous to his admission he had vomited and had been bled. A consultation was called, and it was agreed to cut down upon the bone in order to ascertain whether or not a fracture existed—this was at once done by Dr. HEWSON, and it was found that the bone was uninjured. It was now determined to treat it in the same manner as a case of apoplexy, and a branch of the occipital artery which had been divided in making the incision was allowed to bleed freely.

A few hours after the incision was made the patient died.

Examination thirty-six hours after death.—The vessels of the brain were much congested, and a large quantity of clotted blood, thought to amount to six ounces, was found in the lateral ventricles. There was also some effusion of blood at the base of the brain.

CASE II. *Abscess of the Brain.*—John Gribi was admitted on the fourth of December, for a wound on the left side of his head, which he had received five weeks previously.

A few days before he was admitted, he was attacked with convulsions which were believed to be caused by the pressure of pus upon the brain, and he was sent into the hospital for the purpose of having an operation performed upon him. Upon examination of the wound it was found that there was a fracture of the bone with some depression.

He was sensible, his pulse was slow and regular, his pupils were contracted, the whole of his right side was paralytic, and there was a great disposition to sleep. As he had no convulsions after coming into the house, and as he was sensible, an operation was not thought of, and a poultice was applied to the wound. He continued in this state till the morning of the 7th, when he became insensible.

A consultation was now called, and it was determined to remove the portion of bone which was fractured, in order to ascertain whether

or not the compression was produced by pus between the dura mater and bone. Dr. Hewson accordingly enlarged the wound and used the trephine. No pus was found beneath the bone which was adherent to the dura mater.

No change in the symptoms took place after raising the bone—simple dressings were applied to the wound and a large injection and ten grains of calomel were given to him. Early on the next morning I found him with all the symptoms of apoplexy—a flushed face, a remarkably slow pulse, deep breathing and dilated pupils. He was now bled, sinapisms were applied to his extremities and another injection was administered. His pulse rose under the bleeding, his breathing became more natural, and his face less flushed, but a few hours afterwards he died.

Examination twenty-four hours after death.—On removing the skull-cap a small quantity of pus was found between it and the dura mater immediately below where the trephine had been applied.

On cutting into the left hemisphere of the brain an abscess was found, just below the surface, which extended upwards of two inches in one direction, and an inch and a half in the other, and contained three or four drachms of pus. An unusual number of red dots appeared in the brain, and the anterior part of its left side was softened. The vessels of the dura mater were injected.

CASE III. Fracture with depression, followed by inflammation of the Brain.—John M'Quiggen, aged twenty-six, was admitted January 23d, with a wound on the back part of the left side of his head caused by a blow which he had received on the previous night from the sharp end of a spade. Upon examination it was found that there was fracture of the bone with depression.

The skin was cool, and he was faint from the large quantity of blood which he had lost, but had no symptoms of compression of the brain.

The wound was dressed with adhesive plaster, and to guard against inflammation of the brain he was kept perfectly quiet, was purged, and put on a very low diet.

He had no unpleasant symptom till the night of the 28th, when he complained of pain in the head, to relieve which, as it was judged his pulse would not bear bleeding, cups were freely applied.

On the morning of the 29th he became delirious, and continued so during the afternoon and evening; ten grains of calomel was now given to him and repeated in the night

At 3 o'clock on the morning of the 30th he was insensible, had stertorous breathing and dilated pupils, and at 4 o'clock he died.

Examination eleven hours after death.—The wound of the scalp was two inches in length; the bone was fractured for about the same length, and driven in upwards of a quarter of an inch upon the contents of the head—the dura mater was cut through, and the brain itself wounded.

Portions of the posterior and middle lobes of the left side of the brain, and a portion of the posterior lobe of the right side were disorganized.

The membrane lining the lateral ventricles at their posterior part was inflamed, and about a table-spoonful of pus mixed with blood was contained in it.

There was slight effusion of blood beneath the dura mater, at the top of the head, and also effusion at the base of the brain. The dura mater was inflamed.

CASE IV. *Abscess of the Brain.*—F. S. an insane patient in the hospital, was accidentally struck on the left side of his head by a quoit, on the 12th of April.

Upon examination, it was found that the skull was fractured and driven in upon the brain.

No symptoms of compression followed the blow, and after allowing the wound to bleed freely, it was dressed with lint, spread with simple cerate, and the usual means for preventing inflammation of the brain were resorted to.

After a few days he had fever, attended with pain in his head, for which he was purged with calomel, had a solution of tartar emetic given to him, and cups, leeches, and cold applied to his head. His fever gradually left him, but on the 25th he appeared more dull than usual, and on the morning of the 26th had a chill, which was followed by a state of insensibility, and on the afternoon of that day he died.

Examination twenty-four hours after death.—The fracture was an inch and a half in length, and the dura mater beneath it was cut through.

A thin clot of blood was found between the dura mater and the bone, and there was also slight effusion of blood beneath the dura mater.

• Immediately beneath the fracture an abscess was found, of the size of a large walnut. The whole brain presented fewer red dots than usual when cut into, and with the exception of that part just around

the abscess, which was much softer than usual, and of a light yellowish hue, was of the natural consistence and colour.

The membranes of the brain were not at all injected, or their structure in any way altered. There was slight effusion of serum beneath the arachnoid, but none in the ventricles.

CASE V. Compression of the Brain from effusion of blood.—Charles Devènpport, a coloured man, fell from a height of twenty-five feet on the morning of the 13th of August, and received an injury of his head, on account of which he was immediately conveyed to the hospital.

When admitted, his skin was cool, his pulse feeble, and his pupils natural—his attention could be roused when spoken to loudly, but he was unable to answer correctly.

Upon shaving his head, it was found that there was no external wound, but that there was great effusion of blood beneath the skin on the left side of the head.

Sinapisms and heat were applied to his extremities, and cold to his head.

In the latter part of the day he vomited bilious matter twice; his head was hot; pulse still feeble, and the insensibility greater. External stimulants were continued, and in addition to them, cups were applied to his temples.

At 4 o'clock on the morning of the 14th he died.

Examination twelve hours after death.—On cutting through the integuments a very large quantity of blood was found effused beneath the skin, and on removing the skull-cap, about $\frac{3}{4}$ ss. was found between the dura mater and bone at the back part of the head.

Upon examining the skull a fissure was seen extending from the side of the foramen magnum up through the occipital bone to the sagittal suture, travelling up that suture about half its length, and from thence extending into the parietal bone of the left side for two inches. The sides of the occipital bone were separated from each other to the extent of a line. The longitudinal sinus of the dura mater had two wounds in it just above the torcular herophili, one of which was large enough for a common-sized quill to pass through. There was some effusion of blood beneath the pia mater on each side of the cerebrum, and also on the upper and back part of the cerebellum.

About an ounce and a half of blood was found under the pia mater at the base of the brain. The vessels of the brain were much congested, and a small quantity of bloody serum was found in the ventricles.

CASE VI. *Compression of the Brain from depressed bone.*—Edward Morris, a coloured boy, aged fourteen, was admitted into the hospital, August 25th, with compression of the brain. A few hours before his admission he had been struck upon the upper part of the left parietal bone with a sharp stone, which had produced a large wound of the scalp and fracture of the bone.

The persons who brought him to the hospital stated, that immediately after the receipt of the injury he walked a short distance and then fell in a convulsion: from that time till brought into the house he had had several convulsions, and when free from them he remained in a state of complete insensibility. Previous to his admission he had been bled.

Dr. BARTON was in the house at the time of the admission of the patient, and at once enlarged the wound, which bled very freely, and exposed the injured bone, which was driven in, and formed as it were an inverted arch. As there was no fissure whereby the elevator might be got under the bone, the trephine was applied, and the depressed bone raised.

Upon raising the bone no pulsation was seen in the brain, but in the course of a few minutes the convulsion which he had went off, and the brain began to pulsate. He had three convulsions after the depressed bone was raised, and each time during the continuation of them there was an entire cessation of pulsation, but upon their going off the pulsation would again recommence.

The wound was lightly covered with a soft poultice, and as his skin was cold, heat was applied to his extremities.

After reaction had come on, thirty-five leeches were put upon his temples.

Although free from stertor, yet his insensibility continued till late in the afternoon.

By night he was completely sensible, and it was discovered that his whole right side was paralytic.

August 26th.—Has no pain in his head; pulse good; skin comfortable; is able to use the lower extremity of the right side; is not able to raise his arm, but has the proper feeling in it, and can move his fingers. His diet was directed to consist of mucilages, and a solution of cream of tartar was given him for drink.

27th. Has complete command of the right side of his body. Complaints of his head feeling hot, but has no pain in it; pulse rather frequent. Took \mathfrak{z} x. of blood from him, and ordered \mathfrak{z} ss. of salts to be given to them, which operated freely.

28th. No pain in the head; wound is suppurating freely and looks well; pulse good.

30th. Improves; pulse natural.

Sept. 3d. Continues to improve. The dura mater is now covered with granulations, and the wound is filling up rapidly. From this time his diet was gradually increased, he improved regularly, and by the 20th of October the wound was entirely healed.

ART. V. *Observations on the Remedial Powers of the Cimicifuga Racemosa in the Treatment of Chorea.* By JESSE YOUNG, M. D. of Chester County, Penn.

CHOREA SANCTI VITI, although of not very frequent occurrence, or of an immediately dangerous tendency, is generally an exceedingly obstinate and intractable disease, and sometimes persists for months or years, inducing loss of appetite, anxious and dejected countenance, extreme debility, and what is most distressing, a gradual declension of the mental faculties, and the hideous prospect of its terminating in complete and permanent imbecility or fatuity. Such being the case, I have thought that it would be interesting to make known the remedial powers in this disease, of a plant, which, so far as I know, has not been recommended by any one who has written on the subject, and which has proved completely, and very promptly effectual, in *four* successive cases, in which I have known it used; although only one of them was under my own particular care or direction; I can however vouch for the entire correctness of the statements of the other cases.

The article referred to is the pulverized root of a very common vegetable production of our rich woodlands, known by the common or familiar name of *black snakeroot*. Its technical name as given by DARLINGTON, quoted from ELLIOTT, is *Cimicifuga racemosa*, called by PURSH, *Cimicifuga serpentaria*, and by WILLDENOW, MÜHLENBERG, and MICHAUX, *Actea racemosa*. I subjoin its botanical characters from the Florula Cestrica of Dr. Darlington. Class *Polyandria*, Order *Di-pentagynia*. Calyx four or five-leaved; corolla four-petalled; capsules one to five, oblong, opening along a lateral suture; many-seeded; monogynous; leaves decomposed; racemes virgately paniculate; common in rich woodlands; flowers latter end of June;

four to six feet high; flowers white. "It is a very popular medicine both for man and beast; it is used in infusion or decoction, chiefly as a pectoral medicine," &c. Perhaps there is no country physician but will acknowledge the truth of the above, and perhaps too, they will agree in the assertion, that "its properties have probably been overrated" in the affections in which it has heretofore been used. Who first used it in chorea, I have no means of learning, but it came to my knowledge as related below.

Four years ago a son of Mr. Joseph Fairlamb, aged about eleven years, was attacked with chorea; one side was affected, and was in almost constant motion, except when he was asleep. He was affected with it more than four months, during all which time his family physician was using all his efforts to arrest it, but without the least benefit resulting. He at length was informed by an *old woman* in the city, to whom he was speaking of the distressed situation of his son, and not consulting her as a doctress, that the pulverized root of the black snakeroot would cure it. She told him to give a tea-spoonful three successive mornings, then omit it three, and thus give it alternately three mornings together, until he gave it nine times. He procured a quantity from a drug store, and commenced its use immediately on his arrival at home, according to the old lady's directions, and he lately assured me that when the boy had taken six portions he was almost well; and when he had taken his nine portions he was perfectly cured, and has remained so ever since. I heard of the case and its cure about the time it occurred, but having no confidence in such a remedy for such a disease, it only brought to mind the adage *post hoc*, &c. and I thought no more of it at the time.

In the month of March of the present year, a daughter of Mr. Isaac Hall was attacked with the same disease. His family physician was called to the case, and after treating it for about a month, without any good resulting, his physician agreed to let him make use of the snakeroot, as he had heard of its good effects in the above case. It was procured, and used as above, and after taking only three portions her symptoms were very much improved, and after taking six doses she was entirely well; the other three were however given, and she remains well at this time. In this case it puked severely, almost every time it was given. I now supposed that probably it was the emetic effect of the article which was beneficial; but on inquiry of Mr. Fairlamb, whether it operated so with his boy, he assured me it did not; but that it "several times, though not always," made him very sick. I now determined to try it, in the first case I might meet with, watch its effects, and thus ascertain whether it

would cure by its own intrinsic properties, or whether those reputed cures, might not be mere coincidences, and in reality the consequences of perhaps former treatment. On the 12th of September an opportunity for trying it occurred; I was requested to see Mrs. —, aged nineteen years; married about two months, believed *not to be pregnant*. The affection had commenced about two weeks ago, but came on so gradually, and almost imperceptibly, that she was not aware of any thing serious being the matter, till within a day or two, she has got so bad as to be almost constantly in motion, with the left side; it does not prevent her from sleeping at night; her general health is perfectly good, in every respect; and on the most minute inquiry, I could not detect a single cause which might occasion it; save only, her father had once been affected so, when a boy; in his case it was produced by fright, and he was cured, or got well in between two and three years, after using much medicine without benefit; but believes it was the cold bath that cured him at last. Whether this fact might account for it, others must determine. I ordered an emetic of tart. ant. with a view to its impression, rather than its evacuant effect, to be succeeded by a large portion of colomel and jalap, next day; and after this, to purge every morning with crem. tart. et jalap, till I could procure the snakeroot. On the 20th I took a quantity of it to her; but was actually startled, when I found the affection had extended to the other side, and was tenfold aggravated; her arms, her legs, her head, face, tongue, and every muscular part of the system appeared to be in continual, irregular, alternate motions; she could only with great difficulty articulate, so as to be at all intelligible; the power of deglutition was suspended to a very great extent; she could not walk one step, nor support herself erect without assistance, nor could she sleep, day or night, on account of the constant twitching and jerking of the muscles. This was her distressing situation when she commenced the use of the snakeroot. I ordered her to take a *tea-spoonful three times a day*, before eating; but if it sickened her, on trial, when taken on an empty stomach, to take it an hour after meals; to be taken in whatever she preferred, as sweetened water, molasses, &c. On the 25th I visited her again, and found a great change for the better; she had walked the day previously, three or more hundred yards from the house; she could speak, and swallow, as well as ever she could, and could sleep well at night; her inferior extremity had but little irregular motion, her head was steady, and the muscles of the face was scarcely agitated; but her arms appeared more affected now than any other part. Encouraged by this mitigation of symptoms, I requested the article discontinued

two or three days, and then to commence again, with a tea-spoonful and a half, as before. Visited her October 2d, found her so well that, a person who was not aware of her having the affection, would not notice any thing ailing her; still, however there was an occasional jerking in the arms; I requested it left off again for two or three days, and then to recommence, as last ordered, except to take it twice a day; she used it two days more, regularly, and then took an occasional portion sometimes once or twice a day and sometimes not, for one week, at the end of which time she discontinued it, being perfectly well, and she remains so at this time.

During my different visits, I repeatedly inquired whether it acted as an emetic or sickened her at any time; she uniformly replied it did not, except two or three times when taken on an empty stomach; neither did it purge, but her bowels were uniformly regular while using it; it neither sweated her, nor acted as a diuretic; how it did act I would not determine, as I could not discover any alteration in the pulse, while under its influence. I however incline to the opinion, that it cured by an immediate and direct impression on the nerves, rather than by any tonic effect. The only sensation the patient experienced was an "uneasy feeling," amounting to "almost an ache" through all her extremities, every time she took it, which would continue from one to three or four hours. This was all I could learn respecting its *modus operandi*; but that *it alone cured* must be obvious to every one.

The effects of it in the fourth case, I was informed of by my friend Dr. RICHARD GREGG. I inquired of him whether he met with any cases of chorea, and informed him of the results of the foregoing cases. He replied "I should have had a case, a short time ago, had it not been for the black snakeroot;" he observed that a man in whose family he practiced, met him in the road and informed him of one of his children having St. Vitus's dance; but he had heard of Mr. Hall's daughter having been cured by the snakeroot, and he was then on his way to see Mr. H. and learn how to use it; adding, if it dont cure I shall have to call you to see her. He saw the man a short time after, and learnt that the patient had been cured in a few days by the article.

The results of these cases, will certainly justify the inference, that it possesses controlling powers, to some extent, over the disease; to suppose that it will always cure, is perhaps too much to expect from any one remedy. My particular object in communicating them so minutely, is simply to state the facts of the cases, with the hope of directing the attention of the faculty to the article, and thus have it submitted to the test of a more enlarged experience, than could pos-

sibly fall to the lot of any one individual. If on repeated trials, it should be found really valuable, its peculiar effects, whether tonic, sedative, or whatever else they may be, can, by watching, be ascertained; and may we not hope, that by the aid of chemistry, its active principles can be detected and separated from those which may be inactive; and that we may thus be put in possession of a cheap and convenient article, which may possess virtues, in the treatment not only of chorea, but of many other of those most troublesome of all diseases, the neuroses.

The idea of the knowledge of its efficacy being derived from an *old woman*, should not, in my estimation, operate against the article so far as to prevent its having a fair trial. I believe the old lady was not a *professed doctress*; but if she were, the knowledge if it prove valuable is none the worse for coming from such a source. What physician has not, and does not, derive many ideas from old women, which are in reality, practically valuable? and it cannot but be acknowledged, that from such sources, and from mere accident, the knowledge of many of our most valuable remedies have been derived, which are now engrafted into, and form a part of the general stock of the science of our profession. If I know my own mind, I am not fond of, nor very prone to, quackery; and, although I freely confess this article was used without any knowledge whatever of its modus operandi, or without knowing what to expect of it, other than probably a cure, it did not disappoint the latter expectation; and I now feel sufficient confidence in it to try it again, if opportunity occurs, and to hope that others will do likewise. If this be quackery, and it be justifiable in any case, it may be so when applied to the investigation of the properties of our indigenous vegetables; but it is not, else the therapeutic part of our profession has scarcely any other foundation to rest upon, than a grand system of empiricism; for the history of almost the whole materia medica shows, that from such sources have been derived our most valuable agents. The investigation of the medical properties of our vegetable substances, then, should rather be considered laudable, when directed with the view of enlarging the boundaries of our knowledge, and thus adding to our resources, than condemned, because forsooth, they may have been the suggestions of vulgar ignorance, or even of empirical experiments, rather than the recondite inquiries of professional erudition. But neither a priori reasoning, nor professional erudition, can ever direct us to the peculiar properties or effects of any of our vegetable productions; they can only become known from repeated trials, or experiments. In this class, exactly, stands the *Cimicifuga racemosa*, in chorea, and probably in

other of the nervous affections. Let it be fairly tried then, and on these trials let its merits stand or fall.

Chester, Pa. Oct. 29th, 1831.

[We are not aware of the remedial powers of the black snakeroot having been noticed by any writer on the materia medica, but Dr. PHYSICK informed us, nearly ten years ago, that he had known that plant, given in doses of ten grains every two hours, prove successful in the treatment of chorea, in several instances.]—EDITOR.

ART. VI. *Observations on those Pathological States of the System generally designated Asthenia, Adynamia, Debility, Weakness, &c.* By E. GEDDINGS, M. D. Professor of Anatomy in the University of Maryland; one of the Surgeons to the Baltimore Infirmary, &c.

THE condition of the living organization which is manifested by a deficiency of power, or a preternaturally feeble exercise of the functions, and hence designated debility, asthenia, adynamia, weakness, &c. has been attentively observed from the earliest period of the world, has excited dread and consternation in the minds of physicians, unnerved the most Herculean powers of both mind and body, and has been accused of constituting an immense outlet of human existence, yet with all our observations and reflexions we are ignorant of its most important laws. Much of the difficulty which exists in relation to the subject is doubtless owing to the imperfect and ill-defined ideas which we attach to the condition itself; but more, unquestionably, to our ignorance of the fundamental laws of the organization. Debility, it must be confessed, is a mere relative term, and cannot be said to express, with accuracy, any positive condition of the functions, or of the structures by which they are performed. Thus, what would be weakness with one individual would be strength with another differently constituted, and by examining the play of the functions in several persons endowed with various temperaments, conformations, habits, &c. we shall observe an infinity of modifications in their physical powers, yet all consistent with perfect health. This, however, is not precisely the kind of debility or weakness with which we are most concerned. "Good health," says JOHN BROWN, "consists in a pleasant, easy, and exact use of all the functions. Ill health in an uneasy, difficult, or disturbed exercise of any or all of

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them." It is, then, when the debility is of that kind which consists in such a degree of departure from the healthy state as to constitute disease, or, in other words, to become pathological, that it most interests us; and it is to this degree, or modification of it, that most of our observations will have reference. It is to this state that the term *asthenia* has been applied by some, and that of *adynamia* by other pathologists.

But we are yet met by the question, what is this *asthenia* or *adynamia*? Upon what state of the organization does it depend? What are its causes, tendencies, and the laws of its extension throughout the system? These are questions which can only be answered by determining the circumstances which attend the healthy operation of the functions, and, afterwards, the manner in which these become deranged or perverted so as to give rise to the want of power in question.

Every living organized being is endowed with a principle which renders it susceptible of the influence of stimuli, and when acted upon by external and internal agents, the result of the mutual conflict between the organization and the causes which influence it, or between the excitability, or susceptibility, and stimuli, is the development of a phenomenon or condition which we designate irritation. All vital phenomena must, therefore, be referred to this source. Under whatever aspect we contemplate them, irritation presents itself as their constant and predominant characteristic, and to its different modifications must be ascribed the endless varieties of healthy and diseased conditions. A knowledge of this law led John Brown to affirm, that life is a forced state; for, says he, if the exciting powers be withdrawn, death ensues as certainly as when the excitability is gone. But while we admit that the entire organization is thus endowed, it must not be conceded that its susceptibilities are equally active in its several parts. This property depends upon the perfection of the organization; its supply with blood-vessels, nerves, &c.; and as the several tissues present much diversity in this respect, so there is great variety in their comparative capabilities of receiving external impressions, and acting under their influence. This circumstance is the source of an important error in the doctrine of Brown, who maintained that excitability is an unit, and, consequently, that excitement must also be an unit, and may be either general, or producing an universal impression throughout the entire system, or local, and confined to a single part. If the law of the organization which we have alluded to be well founded, it necessarily follows, that no impression can be at first universal; or, as has been affirmed

with truth by BROUSSAIS, '*there can never be either a general and uniform exaltation or diminution of the vital properties of the organization.*' In every case the exaltation or diminution commences with some one system or organ, from whence the influence is extended to other systems or organs, either directly or indirectly. The order and degree in which any particular part of the body will be implicated, or made to feel the influence of the causes acting upon the organization, will depend, measureably, upon its susceptibility and the intimacy of its sympathetic relations with the other parts. Thus, the capital systems or organs, if we may thus express ourselves, as the digestive, circulatory, and nervous, are the parts which most readily feel the influence of external impressions, and transmit them with most facility, reciprocally from the one to the other; because they are not only the most exquisitely organized, and consequently possess the highest degree of susceptibility, but are, at the same time, united together by the most intimate sympathetic relations.

But although no agent can affect the organization equally and universally at the same time, there is nevertheless a certain relationship between the operation of its different parts—a certain equipoise of the functions in which perfect health consists. As excitability, susceptibility, receptivity, &c. as it has been designated, is the fundamental quality or property of living matter, to which all vital phenomena must be referred, so is contractility the proximate quality or property by which all these phenomena are accomplished; and the action of stimuli upon the excitability calls into existence the contractility of the tissues, the manifestations of which constitute irritation, which we have already defined. By vital contractility, the shapeless embryo is unfolded and perfected in all its parts; the heterogeneous particles, derived from our aliments, are animalized, and transformed into living structures; and by the same power they are again thrown off, as excrementitious, through the different waste-slucies of the system. By this power the nerves feel, the mind perceives and wills, and the muscles act obedient to its volitions. The indispensable condition of our existence is an incessant state of exertion—a ceaseless state of action and reaction, without which the wheels of life would stand still, and all our wonderful machinery would be brought to the condition of shapeless and inanimate masses, and be speedily resolved into a few primitive elements as insignificant as the dust we tread under foot. Can it then be wondered that actions so delicate, mechanisms so complex, operations so perpetual, should often become irregular and discordant, and thus endanger our safety? Life, in its perfect state of integrity, is, indeed, as represented by CUVIER, "a

perpetual vortex, the direction of which, however complicated, is always the same." But when this state of unison becomes deranged, the direction of the vortex is necessarily changed, and we too often become swallowed up in its conflicting elements.

As stated in the outset of our observations, we only propose to consider that derangement of the harmony of the vital properties of the organization which consists in an enfeebling or diminution of its powers. But what are the principal modifications or varieties of this state? This is a question upon which the sentiments of pathologists are much divided; some making as many varieties of debility as there are modifications of its manifestations, while others, considering excitability as an unit, only make debility the negative state of excitement; and some only having reference to its remote causes, have made forms of debility as numerous as the causes by which it is produced. SAUVAGES,* acting upon these principles, has made seventeen varieties of asthenia, and VOGEL† has arranged under this head every abolition or diminution of the energy of sensation, voluntary motion, and the natural functions; while CULLEN has restricted his definition to an enfeebling of the voluntary movements, either of the vital or animal functions. BROWN, DARWIN, and RUSH, however, only make two forms of debility, direct and indirect; or as the latter has expressed it, debility from abstraction and debility from action. HUFELAND,‡ on the contrary, acting upon a different view, divides it into true and apparent or false, and he says it may take place either from an oppression of the vital powers, or from some alteration of the nervous sensibility. Broussais considers it in most instances as secondary, except where it arises from abstraction of stimuli; and RASORI, TOMMASINI, and others of the modern Italian school, admit that it may be primary or secondary, according as it is the result of contra-stimulant or stimulant impressions. BOISSEAU,§ who has written with ability on the subject, considers it according to the manner of its production, from whence he concludes it may originate from the three following circumstances: 1. From a complete or prolonged abstraction of the accustomed stimulus; 2. The diminution of the reciprocal stimulating influence of the organs; and 3. From the inordinate excitation of an organ, the slightest alteration of which renders the other organs incapable of acting with an equivalent energy. BRACHET,|| in

* Nosologia Methodica, Tom. I. p. 699. Amstelodami, 1768.

† Definitiones Generum Morborum. Götting, 8vo. 1764.

‡ Encyclopädisches Wörterbuch der Med. Wissen. Band 1.

§ Dictionnaire Abregé des Science Med. Art. Asthenie.

|| Memoire sur l'Asthenie, Paris, 1829.

a prize dissertation on the condition under consideration, affirms that asthenia can only manifest itself in consequence either of a diminution of the action of the cerebro-nervous system, consisting in an enfeebling of its special functions, or of the functions over which it presides, or of a diminution of the activity of the functions which depend upon or are under the influence of the ganglionic nerves. This weakness of the nervous system, he thinks, may arise either from a deleterious alteration of the blood, or from a considerable diminution of its quantity.

Without entering into any discussion upon the validity or inconsistency of any of these opinions, we shall proceed at once to detail our own views relative to the nature and consequences of asthenia. In considering the subject we shall pursue a course somewhat different from that which has generally been adopted, and employ a phraseology at variance with that which we have seen was used by Brown, Darwin, and Rush.

For the sake of description we shall divide debility into direct, indirect, and metastatic, not employing the two first terms, however, in the same sense in which they were used by Brown. He confined his definition of direct debility to that which proceeds from an abstraction of stimuli, while in addition to this, we shall include under that head, the debility which arises from those causes, which, by their contra-stimulant influence, directly enfeeble the organization. By indirect debility, we mean as well that weakness that arises from exhaustion, or fatigue from overaction, as that which takes place in consequence of a prejudicial deterioration of the nutritive molecules of the blood, in consequence of impressions first made upon the living solids, which, by their modified or perverted operations on their contained fluids, alter their properties. The term metastatic debility, (*debilitas metastatica*,) was employed by Hufeland to represent that state of debility which proceeds from a transfer of diseases, especially those of a cutaneous character.* By it we wish to designate that form of asthenia which takes place when one organ is inordinately irritated, and thus concentrates a portion of the irritation of the others in a focus, leaving them in a minus state of excitation. With these preliminary definitions, we shall proceed to consider the different forms of debility which have been enumerated, taking them up in the order in which they have been detailed.

* Encyclopädisches Wörterbuch der Med. Wiss. Band 1, 453.

§ 1. *Direct Debility.*

It is needless we should say much of the first variety of direct debility, or that which proceeds from the abstraction of stimuli, as instances of it are too numerous to require any particular exemplification. The humbler walks of life, where squalid poverty and indigence prevail extensively, present unfortunately too many examples of debility from the abstraction of stimuli. The pallid and emaciated form, the flaccid and inactive muscle, the impoverished and almost colourless blood, the general imbecility of the mental faculties, together with the universal breaking up of the vital forces, too clearly proclaim, that under these circumstances the proper quantity of the pabulum vitæ is not furnished to nurture and sustain the flame of life, which, being gradually exhausted, either flickers away for want of sustenance, or is at once extinguished by the influence of mortal diseases, generated by the unnatural and restrained circumstances under which it is placed. Asthenia from this cause is fortunately not of frequent occurrence in this country: but in other sections of the globe, in which either from a native sterility of the soil, an overgrown population, or habits of indolence, a sufficient quantity of healthy sustenance is not furnished to satisfy the demands of nature, asthenia of the kind in question often prevails to a deplorable extent, and becomes a fruitful source of disease and death. It is, indeed, under these circumstances, that the most formidable pestilences are usually generated, and in camps, prisons, garrisons, &c. this cause operates so extensively, as often to constitute one of the principal calamities of war.

But it is not the abstraction of sustenance alone that gives rise to consequences thus deplorable. They may take place even where the quantity is considerable; but where the quality is not suited to the exigencies of nature. Man seems to require, to ensure the full development of his physical forces, a due admixture of vegetable and animal diet, as it has been satisfactorily proved, that an exclusive use of the one or the other of the substances is highly unfavourable to the attainments of this end. The Burats, who subsist on food almost exclusively animal, we are told by PALLAS, are remarkably effeminate, and are so weak and small of stature, that five or six Burats are often incapable of accomplishing what a single Russian can effect. Contrary, moreover, to what has been often asserted and believed, muscular energy is more feebly developed in savage life than in a state of civilization. This proposition has been fully established by the observations of COLLINS, COOK, PERON, and others. In the native

inhabitants of Van Dieman's land, who subsist measureably upon fish and insects, the muscular power was found by Peron, on several trials, to be less, by almost one-third, than in the English. The abstraction of air, light, heat, and electricity is capable of producing results similar to those which arise from the abstraction of food and drinks. There is, however, one circumstance connected with the abstraction of food and drinks, which is somewhat curious:—that the latter are much more important for the preservation of life than the former. It was long ago observed by Hippocrates, that an abstinence from food can seldom be endured beyond seven days, without inducing death. The allowance of a small quantity of water has, however, been known to protract existence considerably beyond that period. REDI* found by experiment, that fowls deprived of both food and drink, did not subsist beyond the ninth day, while the same animals, supplied with water alone, sometimes lived twenty-one days. The human subject has been known to subsist for a longer period on water, without any thing like food. But in all cases, a deficiency of the one or the other is productive of great distress. When intense hunger or thirst is protracted for any great length of time, the head and stomach become painful; fever, jaundice, and delirium supervene; an overwhelming debility takes place; the features shrink; the teeth become covered with a black sordes; the saliva bitter; the breath offensive; the urine acrid and scalding,† and life is terminated under the most horrid sufferings; or if preserved by an allowance of food, the individual generally suffers a dangerous and protracted disease, generated by the intense degree of asthenia, by which his powers are overwhelmed.

The influence of the exclusion of light and air on animal, and even vegetable life, is well known. Cut off from these sources of stimuli, the vegetable droops and languishes; its growth is interrupted; its parts are imperfectly unfolded; it is unable to put forth its rich and luxuriant foliage; the native brilliancy of its colours grows pallid and sickly; it withers away like the “sear and yellow leaf of autumn,” “and perishes and passes.”—Light is indeed so essential to the existence of many vegetables, that they turn their expanded disks to the bright orb of day, and drink in, from his brilliant rays, their life and animation. Others fold in their rich petals and foliage at the approach of evening, and during the reign of darkness, seem to repose in a state of torpor, until again aroused to life and activity, by the return

* Osservazioni intorno agli Animali viventi, &c. Firenze, 1684, p. 92.

† Rudolphi Grundrisse der Physiologie, Band. 3, Berlin, 1828.

of the genial influence of the morning sun. Animated nature, too, participates in this paralyzing influence of darkness, and this vivifying controul of light. As night comes on, the sweet warblings of the songsters of the grove gradually die away; the lowings of the herds are hushed; the fowls retire to rest, and even man, wearied by the cares and toils of day, and enfeebled by the empire of darkness, is gradually weighed down by sleep, and overwhelmed in sweet forgetfulness.

Cut off from the pure vital air of heaven, man cannot exist, and even a partial abstraction of this important principle speedily enfeebles the physical forces to an alarming degree. Were any illustrations of the induction of asthenia from this cause necessary, a most melancholy source is furnished by the account of the sufferings of some English prisoners, who were confined in the black hole of Calcutta. Of one hundred and forty-six individuals thrust into this miserable prison, which was only about eighteen feet square, and deprived of every source of ventilation, except by two small grated windows, only twenty-three survived, at the expiration of about ten hours, and they in such an enfeebled state, that when an order was received for their release, it was with much difficulty the piles of the dead could be removed, which had become heaped up against the door. They suffered the most indescribable tortures, from which they were only released by death, or a state of insensibility.

The abstraction of heat is another fruitful source of asthenia, which should be ranked under the head we are now considering. Moderate degrees of cold have been supposed to invigorate the system, and if we may judge from the constitutions of those who inhabit temperate regions, the conclusion would seem to be just. But it must be remembered, that the intense degree of heat, which is endured in tropical regions, debilitates by exciting inordinately the powers of life, and by thus occasioning an excessive discharge of the fluids of the body. The greater vigour, therefore, of the inhabitants of higher regions, is merely owing to their living in a temperature more congenial to the susceptibilities of the system, and their not being exposed to the debilitating influences just mentioned. The well-known effects of an intense degree of cold are to produce an alarming depression of the vital forces, and even an extinction of life. This is manifested in various ways; as for example, in the languishing circulation, a diminution of animal heat, a loss of muscular energy, a complete extinction of sensation and reflection, and finally, death. The whole of the energies are rapidly subdued, and the stoutest heart cannot bear up. An irresistible disposition to sleep seizes upon the

individual, which no efforts, or admonitions, or remonstrances can subdue; and he quietly falls into the slumbers of death. The debilitating influence of cold is, indeed, sometimes so powerful, that birds are often known to fall down benumbed and helpless, or stiff and dead; and even the polar bear, destined by nature to live in the ice-bound regions of the Arctic circle, not unfrequently falls a victim to the debilitating influence of the intense cold of his native skies.

But, perhaps, a more important variety of direct asthenia or debility, is that which is produced by the operation of contra-stimulant agents, or those causes which tend, by their peculiar properties, to produce a direct depression of the powers of life, independently of any negative property or quality.

Brown laid it down as an axiom, that all agents which are capable of affecting the organization, produced their results by a process of stimulation. In this opinion, however, he has not been sustained by subsequent observations. Indeed, experiments have satisfactorily demonstrated, that there are an immense number of agents which produce an impression directly opposed to that of stimulation, or enfeeble or depress the vital forces, by an operation which is direct, and unpreceded by any excitement. These have been called, by the modern Italian physicians, contra-stimulants. Of the several causes which act thus upon the animal organism, some produce their effects, as it were, instantaneously, and in a moment extinguish the powers beyond recovery; others act more tardily, and merely produce a gradual diminution of the vital energies. Even a single drop of prussic acid, merely applied to the surface of the eye of a dog, or to the tongue, produces death in three or four seconds, and injected into the veins of an animal, it extinguishes life in an instant, as by a stroke of lightning, leaving the muscles almost entirely devoid of all traces of irritability. All substances, possessed of narcotic properties, enfeeble the powers of life, and produce a degree of asthenia which is sometimes alarming, and even fatal. The nervous susceptibility is annihilated; sensation is enfeebled or obliterated; the pupil is widely dilated, the eye is insensible to light; the mind becomes incoherent, or is overwhelmed with a general stupor and coma; the pulse flutters, or is scarcely perceptible; the respiration is slow and heavy; a general coldness diffuses itself over the body; the muscles are agitated with tremors, or are flaccid and inactive; and death is gradually induced by the overwhelming debility which pervades the organization. These effects arise from the operation of a great diversity of agents, and are almost always induced by an inordinate dose of opium, hyosciamus, belladonna, tobacco, &c. Indeed, all these substances possess the

property of enfeebling, or extinguishing the irritability of the organization; and thus, by rendering it insusceptible to the impressions of the ordinary stimuli which act upon it, either occasion an alarming degree of debility, or even death. Himly found by experiment, that a solution of opium, applied to the brain or the stomach, completely destroyed the irritability of the heart in the short space of ten minutes; and many of the irrespirable gases, as the sulphureted and carbureted hydrogen, the carbonic acid, &c. are known to produce the same effect with great promptitude. Indeed, the researches of Bichat have satisfactorily shown, that even the black, or undecarbonized blood, when brought in relation with the left side of the heart, completely paralyzes its energies, and arrests its contractions. An impure atmosphere always contributes to give rise to more or less debility, and in some situations, especially those which are exposed to miasmatic exhalations, the enfeebling and undermining influence of this cause is very strikingly manifested. We are aware that there has been some differences of opinion relative to the primary operation of malaria, some conceiving it to be debilitating, while others have maintained that it is always stimulating; but if we attend to the manifestations attendant upon its action, every thing will be found to favour the first of these opinions. Under all circumstances the internal and external cutaneous surfaces, or the mucous membranes and the skin, are the recipients of all impressions developed by this peculiar impalpable material, and whenever exposed thoroughly to its influence, we find their functions impaired or suspended, or submitted to a deranged or perverted action, proportionate to the intensity of the cause acting upon them. Their susceptibilities are blunted; their secretions are suspended or diminished in quantity; their circulation languishes; a general stupor and inappetency seizes upon them, and this influence being gradually extended to the other systems, the natural vigour and harmony of their functions become disturbed and broken up, and a profound asthenia overwhelms and paralyzes as it were the energies of the living organism. The sunk and pallid countenance, the flaccid and tremulous muscle, the languid circulation, the imperfect calorification, the sluggish sensibilities, and the general imbecility of the mental and corporeal energies of those who have been long exposed to the influence of an atmosphere abounding with these poisonous exhalations, too clearly prove, that their effects are powerfully debilitating and that they cannot be referred to a stimulant impression. It is indeed in this manner that they become such a prolific source of disease, and lay the foundation for such serious and irreparable ravages upon our organs. Many of the metallic salts, moreover, seem to ex-

ercise a debilitating influence upon the living organization. This is especially the case with antimony and lead, the latter of which, indeed, when pushed to any extent, is capable of producing a complete paralysis of the muscles. To these causes must be added the influence of the depressing or debilitating passions, which sometimes prostrate, in an instant, the whole of the powers of the system, even beyond recovery. The operation of fear, especially, tends powerfully to enfeeble the powers of life, and under its agency even the stoutest heart is made to quail, and the bravest cheek grows pale and lifeless. The muscles are instantaneously bereft of all power; the life blood retreats from the surface; the heart palpitates; a mortal coldness diffuses itself through the system; an icy sweat breaks out upon the surface; the senses wander; the intellect is dethroned; the volitions annihilated; and a general syncope, in some instances, paralyzes all the organs and functions. Sometimes, indeed, vitality becomes extinct, being annihilated as it were by the overwhelming influence of the debility which suddenly takes possession of the organization. Instances of syncope and death from fear are not of unfrequent occurrence, and furnish a good exemplification of the direct debilitating influence of the depressing passions. The influence of grief and remorse also unnerves the vigour of the vital powers, and undermines the healthy play of the functions. The heart grows sick with care, and under the wasting agency of sorrow and despair, the natural plumpness of health shrinks and withers, and its bloom and freshness fade and vanish. All these causes act somewhat differently, yet all are instrumental in developing similar results. Those of a physical character exercise their influence by debilitating some portion of the living organism, which, from its sympathies, tends to involve other portions in the same condition with itself; while those which are purely mental, seem first to enfeeble the brain, and to extend their influence from thence through the spinal centre and the ganglionic nerves, to the different systems and apparatus over which they preside.

To the causes of debility which have been enumerated, must be added the condition which has been called by some pathologists anemia, or that state of the system which has been characterized by a paucity of blood. When this deficiency has been occasioned by the artificial abstraction or accidental loss of the vital fluid, its debilitating influence is well known. But although this form of anemia very naturally falls under this division of our subject, it is not our intention to consider it here, as its effects are so palpable as to require no illustration. The form of anemia to which we wish to have special

reference, is that which proceeds from some change taking place in the process of sanguification, or in the organic structures by which the blood is elaborated and distributed to the elements of our tissues. It may be very justly alleged, that the anemia is, under these circumstances, consecutive upon preëxisting debility, and that it is the consequence and not the cause of that condition. But although this is true, as regards the state of that portion of the organization which is in immediate fault in occasioning the anemia, yet it is not altogether correct when applied to the parts which may suffer from the defective or deteriorated circulation through them; for, as the blood is an essential stimulus for the living organism, it necessarily follows, that whenever its supply is defective, or its qualities deteriorated, the portions of the organization which are brought under the influence of this defective supply, or this imperfectly animalized blood, must be enfeebled in a direct ratio with the extent of its privation. It is a well-known fact, that when the supply of blood is entirely cut off by the application of a ligature, the muscles are speedily seized with paralysis. Whatever, therefore, diminishes the supply of blood, whether it be imperfect sanguification, a diminution of the calibre of the vessel, a protracted metastasis of the fluid to some other point, or a mechanical impediment to its course, will always debilitate the structure or organ which is exposed to the influence of such cause. A somewhat interesting case of debility complicated with, and probably dependant upon, a general state of anemia, fell under our observation. The individual was a maniac, and had been in that condition for several years, before we became acquainted with the circumstances of his case. With the exception of his mental alienation, he had generally enjoyed good, though not robust health. During the period that he and many others labouring under the same malady were objects of our care, his general health began gradually to decline. He was observed to grow pallid and inactive; his muscular strength gradually declined, and at length became almost extinct; his bowels were torpid; his appetite capricious, though generally he eat the diet that was allowed him. A general inactivity and sluggishness seemed to seize upon all his functions, without our being able, on the most careful examination, to fix upon any particular organ as constituting the source of the manifest decline of the vital powers. His diet was improved; he was submitted to a course of alterative and tonic medicines, yet the asthenia continued to progress with a regular pace. His whole aspect became exsanguined; the borders of his lips presented the appearance of one who had suffered a profuse loss of blood; his muscles became gradually so feeble as to be unable

to sustain the weight of the body, and he was consequently compelled to remain in the recumbent or sitting posture. His bodily powers continuing thus to decline, his faculty of articulating became enfeebled in a proportionate degree, and he finally sunk under the general debility which had taken possession of his organs. On examination after death, the whole of the tissues, with the exception of the muscular, seemed to be almost entirely deprived of blood, or presented the appearance of having been bleached. The arteries and veins were for the most part empty and colourless, and the small portion of blood which had circulated in them, was nearly all collected about the right side of the heart. The muscles retained their natural colour, which contrasted very strongly with the blanched aspect of the other tissues. The brain was unusually white, and was considerably indurated throughout its whole extent—so much so, that it could be rudely cut and handled without being torn or otherwise much injured in its texture. The liver was apparently in a healthy state; the gall-bladder contained the usual quantity of bile; but the bowels, and especially the stomach, presented a diameter altogether unusual. The latter, especially when isolated from the body and cautiously inflated, without using more force than was applied to two other adult stomachs similarly treated at the same time, assumed a volume at least double that to which they could be distended. The distention was equable at every point, and seemed to be attended with an attenuation of the tunics of the organ, which were bloodless and remarkably transparent.

The circumstances of this case are important in several respects, and naturally suggest the question, whether the anemia was the consequence of the induration of the nervous centre, and the cause of the depression of the vital forces? or whether the induration of the brain was the immediate cause of the loss of power, without the anemia having any participation in its development? We are inclined to adopt the former opinion, which, indeed, seems to be supported both by reason and analogy. It is well known that perfect hæmatisation or sanguification, exacts a due and regular supply of nervous influence, and that whatever diminishes or cuts off the influence of innervation, diminishes or suspends that process. The texture of the brain, therefore, having been altered and rendered more compact in its arrangement, than was consistent with the regular exercise of its functions, and the influence of this derangement being reflected, as it were, into the system of ganglionic nerves, which preside over and regulate all the molecular compositions and decompositions of all our solids and fluids, the natural harmony of these changes were of course disturbed or in-

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interrupted; the process of chylification was therefore imperfectly performed; that fluid could not be duly animalized, and was not submitted to those changes by which it is transformed into blood. In consequence, therefore, of the operation of these causes, a sufficient quantity of blood was not elaborated to excite and maintain the healthy play of the organism; it of course became enfeebled in proportion to the privation, and the train of phenomena were developed which exhibited themselves in the progress of the case. But it may be urged, in objection to this conclusion, that the induration of the cerebral mass was sufficient of itself, independently of the anemia, to produce the loss of power manifested by the individual. This we are willing to admit might have been the case, yet we are disposed to doubt the validity of such a conclusion; for it often happens that the brain is as much or even more indurated than it was in this instance, without giving rise to any remarkable depression of the powers of life. Besides, the anemia could scarcely be attributable to any other cause than that which we have assigned; and as the known effects of a diminution of the quantity of the blood, or a deterioration of its qualities, are to enfeeble the organism, we think we are warranted in giving the preference to the conclusion which we have adopted.

Many cases of extreme debility, and even death, proceeding from anemia, might be enumerated, and especially those which occurred amongst the workers of the coal mines of Auzain and Dunkirk, as described by CHAUSSIER; but we deem it unnecessary to multiply examples, inasmuch as what has been already said will, we trust, be sufficient to illustrate the principle in question.

But debility may be also produced by an alteration in the quality, as well as in the quantity, of the blood. Whatever tends, therefore, to deteriorate its properties—to render it less nutritious, less capable of stimulating and sustaining the organization, or endows it with qualities inimical to the healthy exercise of the functions, may depress or enfeeble the powers of life. This is observable in those cases in which the process of hæmatisation is so imperfectly performed that the blood is deficient in red globules, has not its usual proportion of fibrinous particles, and is thin, pale, and watery. We not unfrequently meet with individuals whose blood is in this state; and in some instances we have seen it so thin and watery, as not to exhibit a deeper hue than very weak claret and water. This is often the case in some of the hydropic affections, and is doubtless owing to some change, or morbid condition, of the apparatus of sanguification. But whatever its cause may be, its natural and inevitable consequence

will be, to debilitate the organization, either by not being capable of furnishing the tissues with a requisite supply of nutritive molecules, or of exciting and maintaining in them those impressions which it is its province to sustain. The correctness of these principles are established by numerous facts and observations. It was long since observed by BARTHEZ, that the nerves exercise an important influence on the blood; and some recent experiments of DUFUR,* veterinary professor of Alfort, have demonstrated, that when the pneumogastric nerves of a horse are divided, the blood becomes gradually deprived of its fibrinous matter, and of course rendered thinner and less stimulating. In one case, indeed, in which he performed this experiment, he found the blood of the animal perfectly dissolved and incoagulable; and a portion of this fluid injected into the jugular vein of another horse, was instrumental in developing a gangrenous condition. It is probable, as has been remarked by ANDRAL, that the alteration of the blood which takes place after a section of the pneumogastric nerves, is owing to the embarrassment of the respiration which ensues, a necessary consequence of which is a disturbance or interruption of the process of hæmatisation. But let this be as it may, one thing is certain; the blood derives its stimulating and nutritive properties from its red globules and fibrinous particles, and whatever tends to diminish these, will enfeeble the organization, and whatever increases them, will, for the same reason, augment its activity. It has, indeed, been clearly shown by the researches of PREVOST and DUMAS,† that even the calorific faculty of the blood is increased, in a direct ratio with the augmentation of its red globules. The power of generating animal heat being therefore diminished by the diminution of these globules, the organism becomes thus deprived of another source of stimulation to which it is accustomed, and is of course debilitated in proportion.

Whenever the respiratory function is interrupted or embarrassed, the depurative function performed by the lungs is of course disturbed in the same degree. The heterogeneous particles, therefore, which are thrown off through this channel, while the function is exercised in a healthful manner, are allowed to accumulate in the blood, and these floating the rounds of the circulation, they necessarily derange or enfeeble the actions of the living solids. This is especially true of the carbonaceous particles, which it is the province of the lungs to eliminate from the mass of circulating fluids; and as we have already observed, on the authority of the experiments of BICHAT, that the

* Andral *Traité d'Anatomie Pathologique*. Tome 1. † *Annales de Chimie*.

black or unaëriated blood paralyzes the left side of the heart, it necessarily follows, that when the blood is not submitted to the usual changes effected by the respiratory function, its whole mass gradually acquires the properties of this black or venous blood, becomes unfit for the purposes it is intended to subserve, and weakens or paralyzes the whole organization. This is well exemplified by what takes place in asphyxia. Here, in consequence of the suspension of respiration, the blood becomes loaded with carbon; the heart ceases to act; the muscles are paralyzed; the senses fail; the faculty of intelligence is suspended; and there is an apparent extinction of all vestiges of animation. The organization may, however, be still aroused in many cases, and the functions be restored. Supply the blood again with oxygen, which is not only its vivifying principle, but also the instrument by which it is divested of its carbon, and the heart, aroused by its natural stimulus, will again contract; the other organs will be gradually brought into play, and the whole of the functions resuscitated.

Another cause by which the organization may become debilitated, is a defect of nutrition. We have already seen how an abstraction of nutritive aliment produces this effect; but what we wish now to illustrate, is that deficiency of the function in question, which is dependent on some state of the organization itself. The perfect integrity of the structure and of the proportions of the tissues are preserved, as well as the healthful play of their functions, by a just and proportionate deposition of nutritive molecules in the situations which they should occupy, and their removal from those situations as soon as they become useless or unfit for the sustenance of the organism. By this process, the various tissues grow and are supported, are modelled into appropriate forms, are preserved in these states during the term of our existence, and are fitted for the important destinies which they have to subserve. Whatever mode of action or modification of the properties of the living solids accumulates these molecules in a ratio disproportionate to the natural order of their removal, alters the relations, and augments the volume of the tissue or organ, in which such action takes place, thus giving rise to a genuine state of hypertrophy. Whatever prevents a due deposition of these molecules, also occasions a diminution of the volume, or atrophy of the organ. As, therefore, the natural energy of every portion of the human organism necessarily implies the full integrity of its organization, whatever impairs that integrity must abate its powers in a proportionate degree, as well as the activity of the organs with which it is in relation, and with which it exercises a reciprocity of influence. This

is precisely what takes place under the circumstances which we are considering. An atrophy of the brain will thus enfeeble the intellectual powers, as well as the process of sensation and innervation. An atrophy of the heart will debilitate its propulsive agency—will render it incapable of driving the blood throughout the organization, and its different portions, deprived of the nutritive and stimulating influence of that fluid, will fall into a state of inactivity altogether incompatible with the regular performance of their functions. The same state of the muscles will enfeeble their powers of contraction—of the liver, will render it incapable of secreting healthy bile—of the kidneys, healthy urine, and the same of all the other portions of the living organization. The debility is not merely confined to the organ which is atrophied, but extends to all those organs or functions, over which such organ has any controul, or with which it has any very intimate sympathetic relations. A considerable share of the debility which takes place in many chronic diseases is doubtless owing to this cause; and in the decrepitude of old age, we have its influence well exemplified.

§ 2. *Indirect Debility.*

But we must now pass to the consideration of what we have designated indirect debility, or that form of the condition under investigation which does not depend either upon the abstraction of stimuli, or the operation of causes which produce a direct enfeebling of the powers of life.

Debility of this kind may arise from a great variety of causes, some of which operate with great promptitude, while others only produce their results by a gradual impression. To many it may appear a solecism to say, that the organization may be enfeebled as well by too much excitement, as by a deficiency of the natural stimuli which sustain its different operations; yet daily, nay hourly, experience furnishes us with numerous exemplifications of the truth of this proposition. We rise in the morning refreshed and invigorated, yet by the exercise of our daily pursuits and occupations, together with operations of the various stimuli, both physical and mental, to which these subject us, we find ourselves feeble and languid as night approaches, and at length thrown into a state of debility, or exhaustion, from which we are only relieved by the recuperative influence of sleep and repose. By inordinate exertion, or fatigue, the susceptibilities of the organization seem to become blunted or exhausted, and are rendered incapable of reacting with their wonted energy under the influence of common impressions, and require, while in that state, a stimulus

of unusual intensity to produce any impression. Thus, when we look for a few seconds upon a luminous body, the susceptibilities of the retina are so much enfeebled by the strong impression which is made upon that membrane, that all other objects appear dark and indistinct, or when we pass suddenly from the light into a dark room, we are unable at first to distinguish the objects which surround us, and only acquire that power after a sufficient time has elapsed to admit of the sensibility of the retina becoming restored so as to perceive under the influence of the feebler degree of light to which it is now exposed—an effect which is also facilitated by the dilatation of the pupil to such a degree as to admit of the passage of a larger quantity of light to the bottom of the eye than was transmitted before; quantity, under these circumstances, compensating, to a certain extent, for intensity: so it is also with those who have been long addicted to the abuse of inordinate stimuli. At first they produce their usual effects; yet by frequent repetition the receptive powers of the organism become gradually worn down to such a degree that an immense dose is required to exercise any marked influence. This is well exemplified in the temulent stage of mania a potu, in which we are often obliged to resort to the most powerful stimuli to sustain the energies of the system. The long-continued exposure to the stimulating influence of a tropical summer, frequently debilitates to such a degree as to render all exertion irksome; and by the violent excitement of a fit of anger, or a paroxysm of joy, the whole energies of the muscular system are sometimes completely exhausted, and a debility amounting to complete syncope, is not unfrequently induced. The principle under consideration is strongly illustrated by the effects of lightning. The influence of this agent is well known to be powerfully stimulating; yet when animals are destroyed by it, all traces of excitability are so completely annihilated, that the organization cannot be aroused by the most energetic stimuli.

This law of the human organism should always be borne in mind, as it furnishes an explanation of many pathological phenomena; and its application to the elucidation of many states of disease by Brown, Darwin, and Rush, has, we conceive, done much to explain many conditions which were previously not well understood. The extent of the debility induced must of course vary materially according to the intensity of the cause; in some cases being confined for the most part to a single organ, but frequently occupying a wider range. It is probable, however, that most of these causes operate by giving rise to local congestions.

It has been stated, in a preceding part of these observations, that

debility had been divided by Hufeland into true and apparent. Of the latter form, examples are of frequent occurrence, and are often calculated to lead the practitioner into fatal errors. Indeed, it will be found, on a careful examination of the subject, that a large majority of the cases of debility which fall under the observation of the physician, are of that character; and the principal share of his success in the treatment of disease, must, consequently, depend upon a correct appreciation of the several conditions from which it takes its origin.

Of this apparent debility we have an exemplification in that state of the system in which the play of the organs is either embarrassed by a congestion of their vessels, or by an exaltation of irritation in one or more organs, with a corresponding diminution of the vital actions in some other part of the system. The latter, however, appertains properly to the third division of our subject, but the former may be considered here, though it cannot, with strict propriety, be separated from that form of debility which proceeds from the concentration of irritation upon one organ at the expense of others; the congestion by which it is produced, when it does not arise from mechanical causes, always proceeding from the inordinate irritation of the tissue, which is instrumental in inviting an increased determination of fluids to the point.

This is a form of debility which is often met with in practice, and is frequently embarrassing to even the most experienced physician. When these congestions take place in the encephalic organs, they impair the various vital actions which are influenced by that apparatus, in different degrees, according to their extent. Thus they seem to accomplish by compressing, as it were, the encephalic mass, so as to place it in a condition altogether incompatible with the exercise of its natural controlling influence. The intellect is impaired; sensation is rendered obtuse; vision becomes double or incomplete; the faculty of hearing is enfeebled; the muscles refuse to perform their office; respiration is embarrassed, and becomes slow, deep, and laborious; or quick, hurried, and panting; the functions of the lungs are interrupted; the process of calorification is imperfectly executed; the skin becomes cold, mottled, or livid; the influence is propagated to the ganglionic nerves; the heart becomes oppressed; the pulse feeble and slow, or hurried and irregular; the stomach and intestines are involved in the general mischief; the secretory organs cease to perform their functions and become oppressed with an overwhelming congestion; and such a general embarrassment of the powers of life is developed, that unless reaction should come to the assistance

of the oppressed organs, death sooner or later takes place; and even when this reaction does occur, and is effectual in overcoming the congestions, it not unfrequently leads to destructive consequences, by the violent inflammation which ensues. Thus we may have, under these circumstances, all the intermediate degrees of debility, from that which depends upon a slight congestion, up to the complete obliteration of the powers of sensation and motion, which attends a profound grade of apoplexy. Yet it is manifest that the debility is only apparent; for liberate the oppressed organs from the load which burthens their operations, and they will resume their functions without any other assistance; stimulate them, and the oppression is increased, the congestions will continue, and life will become extinct. The same observations will apply to extensive congestions of the gastro-intestinal and bronchial mucous membranes, of the skin, of the tissue of the lungs, of the liver, spleen, and other organs, which perform functions of vital importance in the economy of the individual. Even the heart itself, the great fountain of life, may become so embarrassed by an accumulation of its own contents, as to be unable to perform its office, and thus occasion a general enfeebling of the powers of the system, which can only be removed by those means which are calculated to overcome the congestion. Congestions of the kind in question, especially those of the capillaries of the gastro-intestinal mucous membrane, always attend the cold stage of an intermittent fever, and are, indeed, the efficient cause of most of the leading phenomena which attend that stage of the disease. The subdued form of irritation which remains in that tissue, and in the adjacent organs after the termination of the paroxysm, invite the circulation to that point, in consequence of which, a gradual congestion is developed, which continues to increase until it has the effect of giving rise to reaction, by which an exacerbation is excited, which does not subside until the irritation awakened, or rather exasperated by the vascular congestions is abated, or subdued, either by a free secretion or by the process of revulsion. The debility thus induced is always considerable, and sometimes so overwhelming as to destroy life in the space of a few minutes. A concurrence of circumstances somewhat similar, is doubtless the principal cause of the predominant phenomena which attend the mortal spasmodic cholera. Here, however, the congestions are more overwhelming, the sympathetic concatenation more extensive and important, and consequently, the results are in a proportionate degree of a more formidable character. The extent of the congestion is, indeed, frequently so great, under these circumstances, that death ensues before reaction can take place.

The debility is truly alarming; yet it is only apparent. The powers of the system are only oppressed, not exhausted; and as soon as the congestions are removed, the natural powers of the organs are unfolded, and show themselves competent for all the powers of life, and, indeed, frequently manifest a degree of energy too active to be consistent with their safety. We may compare the debility which arises from causes of this kind, to that paralysis which proceeds from compression of the brain, spinal marrow, or some important nerve. The powers are suspended, not extinct. As soon as the compression is removed, they are again developed, and seldom require to be invigorated by the assistance of art.

It has been very correctly remarked by Boisseau,* that debility may either manifest itself by a diminution of the nutritive power of a tissue, or organ, or by an abatement of its functional energies. The correctness of this proposition is established by many of the instances of debility which we have detailed. In some we have seen that the function alone seems to have sustained the entire onus of the debilitating cause, while in others, this has been borne principally by its power of nutrition. Yet it must be confessed, that neither of these conditions can continue for any considerable period, without implicating the other; for the perfect exercise of a function requires the complete integrity of its structure, and whatever abates or suspends the process of nutrition must of course abate the ability of the part concerned to execute its proper office. Thus the violent congestions of which we have just spoken, are at first purely functional; but soon this derangement leads to other consequences: the faculty of nutrition becomes disturbed; the molecular arrangement of the tissue becomes changed; its physical properties become altered, and its vitalism becomes either increased or diminished. Still, however, a tissue may be inordinately excited, as regards its nutritive functions, while it may be enfeebled as regards the exercise of the function which it performs in the economy of the individual. Take, for example, the mucous membrane of the stomach. When thrown into a state of sur-excitation by the operation of an inordinate stimulus, its circulation is increased; its vessels become distended; its secretions are augmented; its sensibility is increased; it may acquire an accession of substance; yet it cannot digest. It rejects the aliments which are brought in contact with it, or suffers them to pass unchanged. Its function is completely suspended, and as far as that is concerned, it is absolutely debilitated, although in

* Loc cit.

other respects its action is increased. This coincidence occurs in many diseases, and in those of a chronic character especially, has led to many fatal errors in practice. Take, for example, that state of the digestive organs which has been generally designated by the vague and unmeaning appellation of dyspepsia. Physicians, acting upon the supposition that the state of the organ under these circumstances is debility, have directed all their means to invigorate its powers. They have not reflected that the delinquency of function is owing to a subacute irritation of the mucous membrane, which renders it incapable of digesting. What has been the consequence? Stimulants and tonics have been freely plied, with a view of imparting tone to the enfeebled organ; the irritation is exasperated, and the food is rejected or passes through undigested. More active stimulants are resorted to, and the difficulties are augmented. Debility is yet the ruling consideration—stimulants and tonics the remedies for its removal. They are, therefore, reiterated and varied to infinity, until at length the tortured stomach, no longer able to endure the constant irritation to which it is submitted, is subjected to a profound disorganizing process, and the life of the patient is either sacrificed, or he only escapes by seeking some watering place, and thus getting clear of his physician, and his farrago of bitters and blue pills. Happy would it be for man were these errors confined to dyspepsia. But unfortunately there is scarcely a disease, either acute or chronic, in which they are not frequently committed. This important truth did not escape the observation of the philosopher BAGLIVI. “*Abusus accusandi fictam quamdam in morbis malignitatem medicis frequenter imponit—errores hinc in methodo curativa committunt, per quos morbus graviter exacerbatur. Malignitatem medicamentis calefacientibus aggrediuntur, quibus non solum non submovetur, sed viscerum inflammatio magis magisque adjugetur.*”^{*} Indeed, errors of this kind are so frequently committed, that it is impossible for any one who has been at all attentive to principles, to take even a glance at the usual therapeutic procedures which are adopted, without being struck at the deplorable consequences to which they lead. Nearly the whole category of chronic phlegmasiæ are too often submitted to the perturbing and incendiary practice, and not a few of the disorganizations, dropsical effusions, and other irremediable conditions which constitute the finale of these affections, are more owing to this destructive system of stimulation, than to the natural and necessary tendency of the malady. But, thanks to

the genius of Broussais, these affections have been arranged in their proper characters, and those who have profited by his lucid and philosophical exposition, have ceased to regard them as entities, merely dependent upon a simple feebleness of the solids, and have been awakened to the important conviction, that these manifestations of debility, are the natural and inevitable consequences of the ravages of irritation upon the living tissues. This irritation subdued, all traces of debility disappear, the natural play of the organs is restored; the functions resume their healthy exercise and regain their natural vigour. Stimulate the suffering organs, and this latent irritation is exasperated, the sympathies extend its influence to the other organs and systems; new sufferings are developed, new lesions brought into existence, the functions become more and more crippled, the treacherous manifestations of debility increase with steady pace, the tendency to disorganization or to profound and incurable structural changes steadily advances, until the individual finally falls a victim to the very means instituted for his relief. No circumstance has tended more to favour the propagation of these fatal opinions, than the belief in essential or idiopathic fevers. As long as diseases are regarded as entities, universally diffused throughout the organism, having no special locality, but floating in the blood, travelling along the nerves, accumulating in the glands, and mingling with every tissue and organ of the body, all ideas of local irritation are of course overlooked; its manifestations are taken for the disease itself, and the physician, carried away by such speculations, bewilders himself in fruitless inquiries relative to this hidden entity, or this inscrutable, intangible minister of mischief, and founds his indications upon no more certain data than the mere accidental contingencies exhibited by the outward manifestations of the suffering organs. Indeed, many console themselves with the belief, that the malady will run a definite course in despite of all treatment—that it must pass through a regular series of revolutions and counter-revolutions, before it can be brought to a termination—that the vires medicatrices of the system are alone competent to ward off or vanquish the evils which prey upon the system—and that their only duty is to watch symptoms, to brace up the powers of the system, to enable them to bear up under the conflict which is carried on between them and the invading foe. The symptoms of debility, which are a necessary consequence of the intense irritation with which the tissues are involved, is estimated as a part of this imaginary entity, and to remove them is considered the leading object of the physician. Their presence is construed into an evidence that the powers of the system are unable to struggle with

the disease. These powers must of course be fortified; cordials and tonics are regarded as the only chance of salvation; wine, quinine, camphor, and ammonia as the unicum remedium, and they are plied with an unsparing hand. The system must be supported—stimulation is the rational means. The debility continues—this is a signal for the continuance of the invigorating system: the tongue becomes dry and cracked, the secretions suspended, the muscular strength still more prostrated; more stimulants must be administered. Delirium and coma supervene, with hiccup and subsultus tendinum—these are symptoms of typhus, and typhus is a disease of debility; of course the most diffusible stimuli must be resorted to, and this wise course is continued until the patient is released by death. Let us then examine the organs, and see what is the condition exhibited by them? What, in effect, are the lesions observed after death, under circumstances such as we have detailed? When we expose the important viscera of the body, do we meet with nothing but evidences of debility? True, we encounter every thing to explain the symptoms of asthenia, yet it is not a condition of pure debility involving the organs and texture, but a weakness of function proceeding from an intense degree of irritation, implicating the tissues essential to life, which renders them incompetent to discharge their offices in the economy; a debility not dependent upon a deficiency of action, but upon an inordinate excitation of the living structures—a state arising from a struggle between life and death—not to be removed by stimulants, but constantly exasperated by such means; the natural tendency of which is to disorganization, which can only be prevented from taking place by the employment of those remedies which are calculated to subdue or transfer irritation. We find the gastro-intestinal mucous membrane inflamed, in a state of ramollissement, frequently studded over with ulcerations, and sometimes completely disorganized; occasionally thickened or attenuated, in some instances detached and flocculent, or firm, compact, and resistant. Its secretions are altered; its colour is frequently changed; its vessels are congested; and not unfrequently small quantities of blood are effused upon its surface. We find the substance of the brain injected with blood, presenting a preternaturally vascular appearance; its texture softened or indurated, sometimes almost pultaceous; its serous membranes inflamed, not unfrequently coated with plastic lymph, with its surfaces adhering, or separated by a serous effusion. We encounter similar lesions in the spinal marrow and its coverings. The medullary substance of the nerves is also sometimes involved; their neurilemma is turged with vessels, and inflamed; the ganglions are of a deep red

colour, and occasionally injected with a sero-sanguinolent fluid. The pulmonary mucous membrane is also frequently involved; the liver is perhaps congested or softened, and the kidneys sometimes bear evidences of a similar condition. Shall we be told that these are evidences of a state of pure debility? that simple weakness of the organization can produce ravages such as these? Yet all the lesions which we have detailed, are commonly met with after violent cases of typhus; all the symptoms which we have described are the ordinary attendants upon that disease; yet, say the essentialists, typhus is a disease of debility; and when they are shown these lesions, they gravely affirm, that they are merely accidental consequences of the fever. But can a state of simple, uncomplicated weakness produce disorganization? We think it cannot. Such a result can only be produced by irritation, and when it does supervene upon a state of asthenia, it is always in consequence of the supervention of irritation upon the latter condition. True, disorganization may take place in a tissue or an organ, while it is labouring under a state of functional weakness; yet, under these circumstances, we have not a coëxistence of nutritive debility; for the very imbecility, manifested by the functional operations of the organ, is a consequence of the irritation of its tissue. Shall we then endeavour to overcome inflammation of the stomach, by throwing into it remedies to make it digest? to subdue inflammation of the brain by exciting the passions and emotions of the mind? or to relieve inflammation of the lungs by accelerating its alternate collapse and distention? We think the essentialists themselves would scarcely contend for the correctness of this practice; yet it would be a fair and legitimate induction from the leading principles of their doctrine. The debility is secondary, and is a natural consequence of the irritation, which implicates the nutritive operations of the tissue affected, and disappears as soon as that irritation is subdued, or is transferred. All the phenomena of debility which attend the worst cases of typhus grow out of this state of irritation: all those circumstances which have incurred for that disease the appellations of putrid and malignant, are referable to the same condition of irritation, and can never arise from a mere want of action in the living structures. Mere weakness cannot produce increased heat and frequency of the pulse, intense thirst, and a dry, parched skin: it cannot give rise to a suffused countenance, a red and fiery eye, watchfulness and intolerance of light, hurried respiration, pain and uneasiness in the different organs, delirium, coma, mania, subsultus tendinum, and the various other phenomena which accompany typhus and other fevers. They can only be developed by irritation; it always precedes them, and is their generating

cause. They are constantly regulated by its intensity, are exasperated by whatever aggravates it, and are mitigated by whatever mitigates, or subdues its intensity. The assemblage of circumstances, which characterize the condition called malignancy, have a close relationship with the progress of the irritation to structural changes and disorganization, and constantly accumulate in proportion to the approximation to these conditions. The mucous membranes are probably the parts first involved, and the functions which they execute are, therefore, the first to become enfeebled by the irritation which implicates those structures. But constituting as they do, the centre of sympathy, and having most of the other organs ingrafted, as it were, upon them; the irritation irradiates from this point, into the various tissues and systems, in proportion to the intimacy of their sympathies, involves their structure, alters their functions, and breaks up all the regular operations of the system. The heart and arteries are stimulated to increased exertion; the process of calorification is rendered more active; the nervous system is excited; the secretions are increased, or locked up by the intensity of the irritations; and all those symptoms are developed which characterize the first stage of excitement. Important molecular alterations are, however, going forward at the same time, in the different tissues which are implicated, and in proportion as these increase, their functions must, of necessity, become impaired. The pulpy substance of the brain and nerves especially, soon become so much altered, as to disqualify them for the execution of perfect innervation, and the organs which they controul being deprived of their influence, are no longer able to perform their healthy functions. The action of the heart and arteries is modified; the play of the lungs is embarrassed, or the process of decarbonization is not properly executed; calorification is diminished; the blood is imperfectly animalized; it is rendered unfit for the purposes of life; the capillaries have their contractility enfeebled; their contents are retarded in their progress; the blood becomes black, and has its red globules diminished, loses its power of coagulation, and escapes from the mucous and cutaneous surfaces, or is extravasated beneath the cuticle, in form of petechiæ. The membranous envelopes of the nerves being, moreover, implicated, submit the nervous mass to an incessant irritation, which sometimes produces irregular twitchings, or subsultus tendinum, or they compress it, in consequence of becoming thickened or turgid, so as to occasion a condition analogous to paralysis, and thus give rise to all the phenomena which we have just detailed. The natural tendency of either of these conditions is, to produce a profound prostration of the muscular power, which is,

moreover, increased by the concentration of the irritation upon the diseased organs, thus leaving the others devoid of their usual quantum of excitation. The same observations we have made relative to typhus, will apply, with slight modifications, to the other essential fevers of authors; in all of which it will be found, that irritation is the leading condition of the disease, and the debility merely a consequence of the sufferings of the organs. It is no objection to the validity of this conclusion, that stimulants are often necessary, and frequently successful, in the treatment of these diseases. They may become necessary to create revulsion, which is an important means of overcoming diseased actions; or we may be obliged to resort to them, to maintain the nutritive operation of those tissues and organs, which become deprived of their requisite degree of excitation, in consequence of the transfer of the irritation to the affected part. This, however, will be better understood under the next division of our subject.

§ 3. *Metastatic Debility, or Debility from the Inordinate State of Irritation of one or more Organs, the others being thus left in a Diminished State of Excitation.*

It has been stated, in a preceding part of these observations, that no impression can be universally and simultaneously diffused throughout the entire organism. The tissues, being endowed with different degrees of susceptibility, do not respond with the same readiness to the action of external agents; and as these agents must necessarily operate upon one of them before its influence can be propagated to another, it follows that all impressions must irradiate from a central point, and be thus spread by sympathy into the different portions of the system. It is not necessary from this, however, that all these impressions must be eventually felt by the entire organism: on the contrary, the influence of many of them is much more circumscribed, and does not extend far beyond the organ which constitutes its primary recipient; and even the impression awakened by a powerful stimulant, while it excites inordinately one or more tissues, has a tendency to debilitate or diminish the activity of the others. Thus, it frequently happens, when the gastro-intestinal mucous membrane is intensely irritated, that the skin is cold, flaccid, and inactive. The same form of irritation frequently produces great prostration of the muscular energy; diminishes the activity of contractions of the heart, and suspends the secretions of those glands which are only mediately connected with the alimentary canal. In diabetes, in which the kidneys are preternaturally excited, we find the skin remarkably dry and harsh to the touch; and reversely, in many in-

stances, where the cutaneous transpiration is inordinately augmented, the secretion by the kidneys is abated in a proportionate degree. The operation of this law is, moreover, well exemplified by what takes place during pregnancy. Under this state of the system, the uterus and its contents levy heavy contributions from almost every tissue and organ. They attract and concentrate upon themselves a large proportion of the irritation of the other systems, and leave them in a state of inactivity, amounting, in some instances, to a considerable degree of debility. The digestive function is enfeebled; the bowels become so torpid that they are unable to expel their contents, and require the stimulus of drastic cathartics, in many instances, to enable them to perform that office. The muscles are so much enfeebled that the individual is reluctant to take exercise, and is greatly fatigued by slight exertion; the mind is dejected and despondent; the sensations are frequently perverted; the secretions diminished, or altered in quantity and quality; and many other phenomena are developed which owe their origin to this supremacy of the uterine irritation, and the extent to which it draws upon the irritation of the other organs. It suspends the fatal progress of phthisis pulmonalis; it heals up old ulcers; cures or suspends many chronic diseases; breaks up many abnormal concatenations, and sometimes effects such changes, that many of the diseased actions which it is instrumental in removing do not recur. It is in virtue of the same law, that a large class of our remedial agents, called revulsives, produce their effects; and it constitutes one of the principal hinges, if we may thus express ourselves, upon which revolves the treatment of disease. With what intention do we, in effect, resort to the application of blisters and sinapisms? the insertion of setons and issues? the employment of emetics and cathartics, diaphoretics, and diuretics? Our object is to transfer irritation, and, by localizing it in a new situation, to diminish or break up that in which the disease consists. In a case of pneumonic inflammation, for example, after the intensity of the pulmonary irritation has been somewhat subdued, we apply a blister to the chest, which, exciting there a new point of irritation, more intense than that which occupies the lungs, becomes a new centre of fluxion, to which the circulation is determined: it awakens new sympathies; breaks up the old concatenation of morbid phenomena; liberates the pulmonary irritation from the remaining irritation which involves it, and thus cures the disease. The same principles apply in other diseases, in which we resort to similar applications. The new irritation invites an increased determination; its nutritive actions preponderate over those of the part originally impli-

cated; the inordinate irritation of the latter is gradually broken down, and its actions are reduced to the healthy standard. But with a view of illustrating more fully the nature of our proposition, we will suppose that the blister is applied while the intensity of the inflammation remains unabated. What will be the consequence? We establish a new point of irritation, but as it is still transcended in intensity by the original affection, revulsion cannot be established; the exalted action which involves the diseased organ will not suffer itself to be diverted from its primary seat, and, consequently, the whole sum of irritation established by our remedial agent is transferred by sympathy to the diseased organ, it still constituting the more powerful centre of fluxion, and thus, instead of annihilating the primary malady, it tends to exasperate it, by adding new intensity. This is a fact that has been long known, but not correctly appreciated. The period at which it is proper to employ blisters, was called by Rush the blistering point; an appellation which very clearly expresses that condition of disease called by the advocates of physiological medicine the revulsive point; meaning by this term that state of the irritation of an organ which is sufficiently subdued to admit of a transfer of its inordinate excitation to a remote part, by the establishment of a new centre of irritation, or a new focus of sympathies. We act on the same principle in the treatment of many chronic diseases. It is with a view to these revulsive actions that we resort to perpetual blisters, setons, and issues, in the treatment of the first stage of phthisis pulmonalis; in chronic cephalitis; chronic arthritis; ophthalmia, and many other affections. We frequently heal old ulcers, which had resisted all other modes of treatment, by the insertion of a seton or issue. In apoplexy and inflammation of the brain, we sometimes derive very useful results from the employment of active cathartics, which tend to transfer the irritation from that organ to the mucous membrane of the intestines; and from the application of blisters and sinapisms to the extremities, by which a new point of irritation is established in those situations, which tends to centre in itself that in which the primary affection consists.

It is precisely upon these principles that a great share of that debility which constitutes such a predominant concomitant in many acute diseases, is produced. The inordinate irritation of the organ or organs principally affected, concentrates, as it were, the whole of the irritation of the system upon themselves, employs it in their inordinately excited nutritive operations, and thus leaves the other tissues and organs in a state of inactivity or debility. Let us, for example, trace out the phenomena which attend the development of a

paroxysmal disease, and see how far this explanation will enable us to furnish a rationale of the symptoms. Diseases of this character always have their starting point in some local irritation, generally seated in the gastro-intestinal mucous membrane. The excitation in this tissue being therefore inordinately intense, the fluids of the body immediately take on a centripetal tendency, the whole irritation of the system centres itself upon this point, the other organs languish, their functions are disturbed, and the natural harmony of the healthy actions is completely broken up. How are these changes manifested? The individual complains for some time of a feeling of *malaise* about the epigastrium; he loses his appetite; is troubled with eructations; his tongue is furred; his secretions deranged, and his bowels frequently constipated. These symptoms show themselves at an early period, and are the first consequence of the gastro-intestinal irritation. As yet, however, the influence of this sur-excitation is not widely diffused; it merely manifests itself in a slight functional debility of the part implicated; the other functions being only slightly enfeebled. As the irritation increases, however, and the sanguineous determination becomes more considerable in consequence of it, the influence becomes more widely diffused; the nutritive actions of the various tissues, which are, by this centripetal determination of the circulating fluids, deprived of their necessary degree of excitation, fall into a state of debility more or less considerable, in which they continue until their irritation is restored; the skin becomes pale, cold, and shrivelled; the muscles feeble and tremulous; the action of the heart languishes; the pulse is frequent and small; the secretions are locked up; the intellectual operations are rendered imbecile and unsteady; the senses are enfeebled; the process of calorification is suspended, in consequence of the nerves being deprived of their necessary excitation; the blood is imperfectly decarbonized; it is not propelled with sufficient velocity through the capillary circulation; a general coldness diffuses itself over the surface of the body; the individual complains of a sense of heat and oppression about the epigastrium; strong rigors are developed, and, in short, all the phenomena which characterize the cold stage of an intermittent fever take place. Under these circumstances, therefore, we have a strong degree of debility developed in most of the tissues and organs, by a metastasis of irritation from the circumference towards the centre. Yet they are not all debilitated; for the gastro-intestinal mucous membrane, we have seen, is in an inordinate state of excitation; so much so, indeed, that its actions become supreme, and draw, with unsparing demands, upon the resources of the organs. Soon, however, this

very irritation becomes a means of restoring the nutritive operations in those tissues which it before tended so powerfully to enfeeble. As soon as its intensity has transcended a certain point, it begins to excite the languishing organs, in virtue of its sympathies with them; the heart regains its power, and is even thrown into an inordinate state of action; the pulse becomes full and strong; the faculty of calorification is restored; the skin becomes hot; the eyes turgid; the face flushed; the mind excited; the senses painfully affected by external impressions, and we have all the phenomena of reaction established, or what has been generally designated a paroxysm of fever. This, then, is the whole mystery of the cold stage of an intermittent fever—this the nature of those chills and rigors which so often attend various other affections. There is nothing specific or incomprehensible in the matter. It resolves itself into a simple condition of local irritation which robs the other tissues, as it were, of their power, debilitates their nutritive and functional operations, until their equilibrium is again restored. It cannot be owing to any thing specific in the mode of irritation itself, or in the cause by which it is produced; for it is excited by the introduction of a bougie into the urethra, by a stone in the bladder, by a foreign body lodged in the flesh, by a simple phlegmonous inflammation, and by erysipelas. Indeed, any local irritation, the influence of which extends far enough to controul the circulation, may give rise to it, and by attending to the law which has been laid down, and which constitutes one of the great principles of physiological medicine, the cold which accompanies so many forms of local irritation, can be as easily understood, as any other manifestation of diseased action.

By the same transfer and concentration of irritation, we can explain much of the debility which attends most acute and chronic diseases. It takes place in all the essential fevers of authors. It is strongly manifested in bilious remittent, in yellow fever, in typhus, and the plague. It is seen most strikingly in cholera and gastro-enteritis from poisons and other causes, which impart to it its most intense grade, and indeed there is scarce a form of disease in which the debility from metastasis of irritation is not more or less developed. In the *lypyria* of GALEN and the Greek physicians, the surface of the body was found cold and almost lifeless, while the patient seemed to be consumed by an inward fire. The same thing was observed in the *kabus*, and is met with in most of the febrile affections of the present day. This, however, is not pure debility. Irritation is its generating aliment, brings it into action, sustains it, and again annihilates it. Equalize this irritation, and restore the equipoise of the

action of the organism, and the debility disappears; the nutritive actions are restored, and the functional operations are reëstablished. These principles must never be lost sight of in the treatment of disease. They are the only means by which we can be conducted to a correct pathology, and the only guide to a safe and successful therapeutics. A neglect or ignorance of them, it is to be feared, has been and is still, a means of immolating thousands and tens of thousands of annual victims upon the frightful shrine of debility; and until the minds of physicians can be released from the bondage in which they have been trammelled by this bugbear; the achievements of the healing art must ever have their value greatly abated by its numerous defeats.

We have thus endeavoured to pass in review the several conditions of the system which have been generally designated states of debility or asthenia. Some of them, we have seen, are unquestionably such; but by far the greater number, and, indeed, all those which are observed in the course of acute diseases, are only indirectly so, owe their origin to a process of sur-excitation in some one or more of the tissues, and should consequently be regarded as accidental concomitants and of secondary consideration; the irritation constituting the source of the disease, and the germ of all its manifestations. This we trust will show the danger, nay, the destructive consequences of the indiscriminate employment of stimulants, during the early stage of acute, and indeed many chronic diseases. Such a practice, while it cannot subdue the debility, must inevitably exasperate the malady, and hasten the process of disorganization. We would not, however, be misunderstood. There are many acute diseases in which stimulants will be found safe and indeed indispensable remedies. The nutritive actions of the debilitated tissues may be so much enfeebled as to endanger life, while the irritation continues in the organs which constitute the seat of the disease. Here will a judicious employment of stimulants be necessary to arouse these nutritive operations to a sufficient degree of vigour to preserve them against destruction; they will also prove useful by exciting revulsion. But even here the utmost caution must be observed. Every step we take involves a question of life and death, and an error of judgment may compromit the salvation of our patient.

Baltimore, 1831.

ART. VII. *Observations on the Bilious Remittent Fever, which prevailed in Burke County, Georgia, during the Summer and Fall of 1831.* By A. C. BALDWIN, M. D.

IN my remarks on the bilious remittent fever, which prevailed in Burke county, during the summer and fall of 1831, I shall confine myself to a description of the disease, as it appeared in that section of the county where I reside, and to a general summary of the treatment which was adopted for its removal. The weather immediately preceding its appearance was uncommonly wet, scarcely a day passing without one or more showers of rain. As the rains diminished, and the water began to evaporate, cases of fever commenced making their appearance, and in a short time the disease spread rapidly over the country. In many places entire families were attacked, and in my immediate neighbourhood, scarcely an individual escaped. A chill, preceded by languor and lassitude, as is common in all febrile affections, and accompanied with an uneasiness in the head, generally gave the first notice of an attack. The duration of the cold stage was various. With some it was scarcely perceptible, and disappeared in a short time; with others, so great was the oppression, characteristic of the disease, that reaction was retarded in its appearance, and a chilly sensation, alternating with feverishness, continued during the day. Many complained of having had two and three chills in twenty-four hours; and some asserted that their chill had continued for several days. By opening a vein, a stop was put to these symptoms, the pulse, though before oppressed, became full, hard, and bounding, and the second stage commenced. The skin was sallow, and the eyes presented a similar appearance. All complained of a bitter taste in the mouth, and an intolerable thirst was universally present. The tongue was covered with a dark brown fur; and there was a sense of weight at the pit of the stomach, accompanied with nausea and occasional vomiting, the matter ejected consisting principally of green bile. Most persons complained of griping, and costiveness was a common attendant of the disorder. There was a violent pain in the head and back, and occasionally a pain in the region of the liver. The skin, generally speaking, was hot and dry. In a few cases copious sweats broke out without being productive of any apparent benefit, but on the contrary were of manifest injury. Bleeding at the nose occurred occasionally, and was always followed by an alleviation of the disease. Delirium was sometimes present, and some complained of troublesome dreams, though the mind in general was but little affected during the con-

tinuance of the fever. The remission usually took place in the morning, although the fever was in many instances as high in the morning as it was at any other period of the day. Among children convulsions were very common, and among them the disease proved more fatal than it did among adults. When neglected, or when the cure was entrusted to inefficient remedies, or when the sulphate of quinine was administered before the system had been properly reduced by evacuating remedies, an enlargement of the spleen, and frequently to an enormous size, was the inevitable consequence. Relapses were very common, and were generally, and justly, attributed to too free an indulgence of the appetite, the desire for food being so great after a recovery, as to be almost unmanageable; and from this cause only, many suffered two or three attacks of fever before the commencement of cold weather.

In the early part of the summer, the fever was easily managed. An oppressed state of the system appeared to constitute the disease, and clearly pointed out the indication to be fulfilled. A single bleeding, followed by a mercurial cathartic, and its operation hastened by a dose of salts or oil, frequently put a stop to the disorder, and the patient rapidly recovered. The beneficial effects of blood-letting were peculiarly obvious at this season of the year; a speedy restoration of strength, and a great alleviation of suffering, rapidly succeeding its employment. But as the season advanced, the disease put on a more obstinate character, and it became necessary to call in the aid of other remedies, and to push the bleeding and purging to a much greater extent, before the excitement was reduced, and the secretions and excretions restored to a more healthy condition. One, two, and even three bleedings were frequently required to relieve the vessels of the head, and to equalize excitement; and it was my common practice to give ten, twenty, and sometimes thirty grains of calomel at a dose, and to follow it in two or three hours with an ounce or more of castor oil, and to continue it daily until the alvine evacuations assumed a more healthy appearance, and ceased to be so peculiarly offensive. Nor did I ever have reason to doubt the propriety of the plan adopted; for as the bowels became unloaded, and the discharges assumed a more natural appearance, as they always did when enough medicine was taken to produce active purging, the fever proportionably diminished, and patients quickly became convalescent. When, from disgust, or any other cause, the oil could not be taken nor retained on the stomach, the Epsom salts, combined with senna, was substituted in its place, as an adjuvant to the calomel. But, in all cases where the oil could be retained, I gave it a decided prefer-

ence, and always believed it operated with more certainty, and was productive of more benefit, than any other article of the same class which I employed. Although calomel was administered with such freedom, salivation was seldom induced, nor was it in any case desired. Its occurrence I always looked upon as unfortunate, and to prevent it, as well as to assist in subduing excitement, hastened its operation by salts or oil.

The use of the lancet, and the free exhibition of purgatives, though to be chiefly depended on, and successful in a majority of cases, did not in every instance produce the effect desired, and it became necessary to call in the aid of other remedies in the management of some of the more obstinate cases; and the well-known compound of nitre, tartar emetic, and calomel, proved of essential service, by relaxing the skin and changing the character of the secretions. Emetics, though promising much, did not appear to suit the disease, and the stimulating practice was death. Blisters were not often required, and when used, they were applied for the relief of some local affection. A pain, accompanied with soreness in the region of the liver, which had not yielded to evacuating remedies, and for the removal of which, owing to other circumstances, it would not have been safe to have pushed the depleting plan to any greater extent, occasionally pointed out the necessity of a blister, and was relieved by its application. The same may be said of mustard plasters. They were sometimes employed for the alleviation of gastric distress, and for that purpose proved highly beneficial. Yet their employment was not often required, as the nausea and vomiting were mere symptoms of the disease, and disappeared proportionably as the fever was subdued. Opium in any form appeared always to be productive of injury, and in my practice was in all cases forbidden. The first case which terminated unfavourably under my observation, appeared to have owed its unfortunate termination to the injudicious employment of this drug. It occurred in a child five or six years of age, who had taken a large dose of Bateman's drops before I saw it, and at the time of my first visit, was stupified from its influence. The child died on the third day of my attendance, and during the time it survived its head never was relieved.

The excitement having been reduced, and the liver and bowels relieved, the fever disappeared, leaving behind nothing but debility, and the usual emaciation which follows all severe spells of illness. At this particular time, the sulphate of quinine, administered in one grain doses, three, four, and five times a day, in conjunction with a

mild and nutritious diet, aided by moderate exercise, proved of most essential benefit, the system gradually acquiring its accustomed vigour, and the usual plumpness of the body being restored in as short a time as could reasonably be expected.

Of a large number of cases treated as above but two terminated unfavourably; death in them appearing to have been produced by allowing the system to remain too long in a state of oppression; and had assistance been called for earlier, and the evacuant and alterative plan of treatment been pushed to that extent, which, from experience, had been found necessary in others, it is more than probable that these likewise might have been brought to a more happy termination.

Burke County, Geo. Dec. 20th, 1831.

MEDICAL EDUCATION AND INSTITUTIONS.

ART. VIII. *An Account of the Origin, Progress, and Present State of the Medical School of Paris.*

(Continued from Volume VIII. page 418.)

IN our preceding communications we presented to the readers of this Journal an historical account of the medical school of Paris, as well as an outline of its present organization, and promised to offer in subsequent essays a sketch of the plan of instruction adopted there, and the mode of electing professors. It is with the view of redeeming this pledge that we have undertaken the present essay. But before entering on the subject more particularly before us, we must be allowed to say a few words on the building in which the lectures of the School of Medicine of that city are delivered.

This pile was originally built for and occupied by the school of surgery. It was commenced in the year 1769, on the designs of the architect Gondouin, and completed seventeen years after. The school of surgery having, in consequence of the law of the 18th of August, 1792, been abolished, the building was left unoccupied until 1794, when it was transferred to the school of health, or medicine, which, as we have seen, was reorganized on the 14th Frimaire of that year. It is a noble edifice of stone, built in a quadrangular form and inclosing a large court of about sixty feet in depth and one hundred in breadth. The front of the entire building, on the street, is nearly two hundred feet in extent. The wings or sides of the quadrangle are united to each other in front by means of a peristyle consisting of four rows of Ionic columns, supporting a long covered gallery, in which is located a part of the anatomical museum of the faculty. The front of the transverse building at the bottom of the court, access to which is obtained by means of a passage situated in the centre of the colonnade and closed by an iron-grated door, is handsomely ornamented with six fine Corinthian pillars, of rather large dimensions, and supporting a triangular pediment, on which Berruer has sculptured the allegory of the union of theoretical and practical surgery. In this transverse building, which constitutes the main portion of the edifice, is situated the large anatomical lecture room, or amphitheatre. On the walls of this room, which forms the segment of a

circle, and is disposed in a convenient manner, are found four medallions, containing portraits of J. PITARD, A. PARE, G. MARESCHAL, and J. DE LA PEYRONIE, all of whom, as is probably known to our readers, were surgeons of great celebrity. The room is moreover ornamented with fresco paintings by Gibelin, and with busts of LA-MARTINIERE and of LA PEYRONIE, by Lemoine. Upon the wall opposite the president's or professor's chair, is the following inscription:

“Ad cædes hominum prisca amphitheatra patebant;
Ut longum discant vivere, nostra patent.”

The room is sufficiently spacious to accommodate twelve hundred students. Extensive as this may appear to those unacquainted with the medical school of Paris, it will doubtless cease to be regarded so, when it is stated that the students in that city far exceed that number. Indeed, viewing the unprecedented size of the class, it may be affirmed with propriety that the room in question is too small; for though the students do not all attend the different lectures at the same time—though few of the lecturers generally attract a large audience, and though, in consequence, the benches are far from being always well filled, yet on some occasions the room is not only crowded to excess, but even a number of students are unable to gain admittance. In the council room, in which the faculty holds its meetings, and which is situated at the angle formed by the junction of the central building with one of the wings, there are many busts of the most celebrated French anatomists and surgeons. But the chief ornament of this room consists of the famous painting of Girodet, representing HIPPOCRATES in the act of rejecting the presents of the king of Persia. The rest of the lower floor is laid out in offices and lecture rooms.

On the upper floor of the left wing, as you enter, is placed the library of the faculty; while on the corresponding floor of the right wing, and in the covered gallery connecting the two side buildings, is located the museum. The former is composed of the books of the old faculty, of the Royal Society of Medicine, of the Royal Academy of Surgery, and of the old school of surgery. The collection thus formed was enlarged by purchases made by the faculty, from its restoration in 1794 to the moment of its suppression in 1823; and since that period by means of funds appropriated for that purpose by the university. The number of volumes at present amounts to about thirty thousand. The collection consists of works in the Greek, Latin, Arabic, French, German, English, Italian, Spanish, and Russian languages, principally on medicine and its accessory branches. They

are well arranged and classed in the following order: 1st. Medicine properly so called. 2d. Surgery. 3d. Obstetrics. 4th. Natural Philosophy. 5th. Chemistry. 6th. The different branches of natural history. Besides those on the preceding subjects, there are some works in the various departments of Greek, Latin, and French literature, books of travels and many other subjects having but an indirect relation with the science of medicine. The library likewise contains numerous manuscripts of ancient physicians of celebrity, commentaries in the hand writing of the Deans of the old faculty of medicine, from 1324 to 1786, the archives of the Royal Society of Medicine, of the Royal Academy, and of the old school of Surgery.

The library is opened three times a week during the hours of lectures—from 10 to 2. On these occasions, every one who wishes to read or consult any of the works contained there, is at liberty to apply; but the books must be returned as soon as no longer wanted, and are never allowed to be taken out without special leave from the librarian. On the other days of the week, Sundays excepted, those only who have obtained a ticket from the librarian, are allowed to enter and make use of the books only from 11 to 1 o'clock. They consist of the pupils of the *Ecole Pratique* and of candidates who have passed the fourth examination. On these days the library is thinly occupied, but on the public days the principal hall is usually filled with students and others. They observe the strictest silence and behave with great decorum. It is admitted that the hall in which the library is principally situated, though joined to several smaller rooms, one of which is made use of as the office of the chief librarian, is too small to accommodate the number of volumes already collected, together with those left to the establishment by *M. BIDAULT DE VILLIERS*, as well as the crowd of students who assemble there to make their respective researches. Hence it has been decided, within a few years, to appropriate for the use of the library, independently of the rooms it now occupies, those in which the museum is placed, as soon as the latter is translated into the apartments which are being prepared for it in the adjoining building. When this arrangement is effected, there will be sufficient space for displaying and classing in a desirable manner all the books; and it is to be hoped that suitable funds will be appropriated by the faculty, the university, or government, for the purpose of enlarging the collection, and of enriching it by the purchase of medical works in living foreign languages—a department in which it is very deficient. It is to be hoped also, that the learned societies in France will be forced to present their publications to this useful establishment, and that the professors of the

faculty, in order to set a good example, will no longer refuse, as they have but too often done, to enlarge the collection with copies of their own works. It remains to remark, in reference to the subject before us, that this establishment is confided to the care of a chief librarian and of one or two assistants. The former, Dr. MACMAHON, is the son of an Irish gentleman, but a Frenchman by birth. He speaks the English language very fluently, and is extremely well read in medicine. But these are not his only claims to our regard, for we could with difficulty point out an individual who combines in a higher degree all the qualities of the perfect gentleman. Dr. Macmahon's principal assistant is Dr. BAYLE, the author of several works of considerable merit. He is one of the *aggrégés* of the faculty, and a member of the board of editors of the *Revue Médicale*.

As regards the museum it will not be necessary to enter into many details, inasmuch as it is not in our power to say much in its favour. It occupies five rooms, one of which, situated in the covered gallery we have already alluded to, is very large. The preparations, which consist of specimens of healthy and morbid anatomy, instruments of surgery and natural philosophy, and objects of natural history, are arranged in the following order:—

The first or large hall contains all such preparations as are necessary for illustrating the composition and structure of the human body in every possible point of view—bones of all sizes and of all ages, healthy and diseased—injections of arterics, veins, and lymphatics—preparations of myology, splanchnology, and the nervous centres and cords, in health and disease—wax models of various parts of the body in health—specimens of comparative anatomy—monstrous fœtuses—mummies, &c. In the second room is found a fine collection of surgical instruments, new and old. The third room contains a tolerably full collection of wax preparations, representing various pathological changes in the tissues and organs, and a few of healthy parts. They were made by PINSON, LAUMONIER, JULES CLOQUET, and DUPONT. In the same room are also found casts of the heads of the principal criminals executed within the precincts of the royal courts of Paris and Versailles; the skulls of several of these individuals are placed in the first room.

The fourth room contains a rich collection of articles of the *materia medica*. The number of these amounts to upwards of seven hundred, and the specimens are for the most part good. The fifth room contains the collection of instruments of natural philosophy used in the demonstrations of the professor of that branch. This cabinet, to which the public is not admitted, is said to be the best in Paris. On

the whole it may be said, that the anatomical museum of the faculty, though rich in many departments, is rather deficient in preparations of morbid parts, and is not arranged and kept with that degree of neatness and cleanliness so desirable in establishments of the kind. In both these respects it is vastly inferior to the Hunterian and other museums of London. It is open for the public on Mondays, Wednesdays, and Fridays, from 10 to 2 o'clock. On Tuesdays, Thursdays, and Saturdays, the pupils of the *Ecole Pratique*, as well as the candidates for the first and second examinations, are alone admitted from 10 to 1 o'clock.

Of the other establishments connected with the school of medicine, we shall speak in detail in some future communication; but to what has just been said relatively to the main edifice of the school, it will be proper to add, that in a contiguous building, the librarian, the dean, &c. have apartments, furnished to them free of expense by the faculty, and in which they reside.

From this digression we turn to the main object of the present article, commencing with the course of study, which the aspirant to the doctorate must go through. It is necessary to premise, that the following remarks apply equally well to all the medical faculties of France. In order to be entitled to a diploma, the candidate must furnish certificates, proving that he has complied, prior to his commencing the study of medicine, with certain prerequisites; for example, that he has obtained the degrees of bachelor of letters and of bachelor of sciences. To receive the former, he must have been examined, and have been found competent on, the following branches:—Greek literature, Latin eloquence, Latin poetry, French eloquence, French poetry, philosophy, history of philosophy, ancient and modern history, ancient and modern geography.

To obtain the second of these degrees—that of bachelor of sciences, the candidate must have answered in a satisfactory manner on mathematics, natural philosophy, chemistry, zoology, botany, and mineralogy. After obtaining those degrees, and presenting his certificate of birth, the written authorization of his father, or if he be a minor, of his tutor or guardian, to his engaging in the pursuits of the medical profession, a certificate of correct and moral behaviour; after presenting these, and furnishing a security, if his father or guardian do not reside in the place, any individual may present himself with a view of commencing the study of medicine, and is admitted to take his first inscription. These inscriptions consist in placing one's name on a register kept for that purpose, and receiving a certificate attesting the fact. This ceremony is gone through every three months; and in

order to be entitled to present himself as a candidate for the doctorate, the student must have received sixteen inscriptions; from which it follows, that the term required by law for the prosecution of professional studies, before the degree of doctor in medicine, or doctor in surgery is conferred, is four complete years; unless, however, these studies have been prosecuted in a secondary school. In such cases, the term required is six years, and it is in the same way obligatory upon the student, previously to have obtained the degrees already noticed—of bachelor of letters, and bachelor of sciences.

Inscriptions received in one medical faculty are of equal value in all the other faculties of the kingdom, provided, however, they are accompanied with a certificate of correct behaviour, from the dean of the faculty, or from the academical council, where they have been received. The first inscription can only be taken out at the commencement of the scholastic year. The royal council authorizes it sometimes to be taken out in the quarter, commencing in January, when satisfactory reasons for not doing otherwise have been alleged by the student; but under no pretext is he allowed to commence his studies in the third quarter. The inscriptions must be taken out in regular succession; unless the reasons assigned for not doing so, are held satisfactory by the faculty. A student who takes out an inscription for one of his comrades, loses all his own. The inscriptions received as aspirant to the title of officer of health, either in a primary or secondary school; are counted for the doctorate, provided the candidate presents, before the 13th, his diplomas of bachelor of sciences and bachelor of letters. But the diploma of officer of health is not admitted as a substitute for inscriptions in a faculty, if the studies required for obtaining said diploma have not been made in a primary or secondary school. The courses of lectures given by medical societies cannot supply the place, in order to obtain inscriptions, of those given by legally established schools. Military surgeons of the second and third classes, who have been employed in the armies, can avail themselves of their services for the purpose of dispensing with the inscriptions; or if they have attended the medical lectures delivered in the military and naval hospitals of instruction, (but in no other hospital,) each of these years of study are received as equivalent for one spent in attendance on a special school. If a young man, after taking out a certain number of inscriptions in a faculty, is called upon for his services in the army, he cannot, on his return, avail himself of the inscriptions allowed him gratuitously for those services, however numerous they may be, for any other purpose than to complete those he was in need of, prior

to his departure. Students residing in cities where faculties of medicine are established, cannot avail themselves of the studies they have made in hospitals, with private teachers, or even in the school, without having taken out the inscriptions corresponding to the period of those studies, unless they can prove, by means of certificates obtained from competent authorities, that it was impossible for them to comply with that regulation. Even under these circumstances, only four inscriptions are allowed them. Nevertheless, an exception is made in favour of those pupils who, though placed in this predicament, have gained premiums in the faculties.

In our last communication we stated, that the number of branches taught in the medical faculty of Paris amounted to sixteen. Unlike what occurs in the medical schools on this side of the Atlantic, and, we believe, in the English and Scottish Universities; but in conformity with the plan pursued in Italy and Germany, the student is not at liberty, in France, to choose himself, the lectures he is to attend in each year. A regular distribution of the courses, the number of these necessary for each student to attend, and the order in which they are to be attended during each session, is fixed by the faculty, and publicly announced at the commencement of the scholastic year. To ensure the observance of this arrangement, each pupil receives a card, by which he is enabled to gain admittance to the lectures he is required to attend. Yet, though this be the case, no student is actually forced to attend the lectures, and all that he is really required to do, is to take out his inscriptions at the regular periods, and to go through the examinations in a creditable manner. If he does that, he may abstain altogether from the lecture room, and seek his knowledge where he deems best. Some years ago an attempt was made to compel the class of each professor to attend him punctually, by calling over the roll not less than twice a month. But this plan was soon abandoned; for the students, unwilling to submit to it, and determined to prevent its being put into operation, answered in full chorus to each name that was called, coughed, sneezed, and scraped their feet, so as to cover the voice of the professor.

The duration of the scholastic year is fixed at a meeting of the faculty, held prior to the opening of the course. The faculty decides on the same occasion, on the days and hours at which the different professors will deliver their lectures. But whatever be the duration of the full session, the courses are divided into two sets—the winter and summer courses. The former commences usually in the early part of November; the latter in the beginning of April, and continues until the end of August. The following will afford an idea of the

distribution of the courses during the winter and summer sessions of the four years of the studies, drawn up by an *arrêté* of the royal council, in 1820.

FIRST YEAR.—*Winter.*—Anatomy, Physiology, Chemistry.—*Summer.*—Medical Natural Philosophy, or Hygiene, Surgical Pathology, Botany.

SECOND YEAR.—*Winter.*—Anatomy, Physiology, Operative Surgery.—*Summer.*—Medical Natural Philosophy, or Hygiene, Pharmacy, Surgical Pathology, Surgical Clinic.

THIRD YEAR.—*Winter.*—Materia Medica, Medical Clinic.—*Summer.*—Operative Surgery, Surgical Clinic, Medical Pathology.

FOURTH YEAR.—*Winter.*—Medical Clinic, History of Medicine.—*Summer.*—Surgical Pathology, Legal Medicine, Clinic at the Hospice de Perfectionnement, Midwifery.

Since the period at which this arrangement was made, some changes, occasioned by the organization of the school, have been effected in the distribution of the courses. The following list, showing the courses delivered in the winter and in the summer sessions, though not quite satisfactory, since it does not indicate the lectures that must be attended in each year by the student, is copied from the *Almanach Général de Médecine*, for 1830.

Winter Lectures.—1st, Anatomy; 2d, Physiology; 3d, Medical Chemistry; 4th, Surgical Pathology; 5th, Medical Pathology; 6th, Operative Surgery and Dressings; 7th, Surgical Clinic; 8th, Medical Clinic; 9th, Obstetric Clinic.

Summer Lectures.—1st, Medical Natural Philosophy; 2d, Hygiene; 3d, Medical Natural History; 4th, Midwifery; 5th, Surgical Pathology; 6th, Medical Pathology; 7th, Pharmacologia; 8th, Therapeutics; 9th, Medical Jurisprudence; 10th, Surgical Clinic; 11th, Medical Clinic; 12th, Obstetric Clinic.

From this it will be perceived that all the clinics, as well as medical and surgical pathology, are taught both in winter and summer. These double courses are not, however, obligatory in both seasons, but have been arranged in that way with a view to accommodate those students who feel disposed to attend them during summer instead of winter, and who have thereby more time to devote to anatomy and the other branches.

In old times three grades or titles were successively conferred on the candidate for the high honours of the profession; these grades were the *baccalaureate*, the *license*, and the *doctorate*. Each of them was conferred after a fixed period of studies, and after particular examinations and ceremonies; and before being raised to the doc-

torate, it was of indispensable necessity for every individual to have passed through the two first. These grades were not conferred by the same authorities; those of bachelor and licentiate in medicine being obtained from the chancellor of the university, and that of doctor from the faculty of the school where the individual had prosecuted his studies. In the progress of time, however, this arrangement was modified, and the faculties assumed the right of conferring all their honours; or more properly speaking, of recommending those candidates they thought entitled to either of the grades we have mentioned to the chancellor; for to him devolved the exclusive privilege, in all cases, of conferring degrees. When the downfall of all the establishments of public instruction was effected by the early revolutionary governments, the plan of which we have just spoken, was necessarily abandoned; for, as we shall have occasion to show in a more particular manner at some future period, all practitioners of medicine being placed on the same level, and neither knowledge nor graduation being any longer obligatory, the different grades in the profession became useless, and were of course no longer sought after. So soon, however, as some order had been reestablished in the practice of medicine by the decrees of the convention, and the school had been reorganized, one grade, that of officer of health, was instituted, and it was only under the consular government of Napoleon, by the law of 10th March, 1803, that the doctorate, but the doctorate alone, was again conferred—the officers of health, created by the same law, being a different order of physicians. By the decree of 1808 relative to the formation of the University, the old plan of the three grades was revived in the five faculties of which that establishment was composed. These grades, or titles, were conferred exclusively by those faculties after public examinations and public acts. They did not confer the rank or title of member of the university, but were requisite before an individual could be entitled to that honour. Whether the plan was ever fairly put into execution or not, we have not the means of ascertaining; but we believe it may be confidently affirmed, that for many years past, perhaps ever since the restoration, only one grade, the doctorate, has been conferred. Such is the plan now pursued, though, as we shall see presently, this grade is obtained after several examinations, undergone at different, but fixed periods, in the course of the studies.

• While on this subject we may be allowed to express the opinion, that the plan of conferring several degrees, at various periods of the studies, on those who aim at the high honours of the profession, was always found to be productive of the most advantageous conse-

quences; and it is impossible not to regret that it has been abandoned in France. By means of it the young man is brought frequently before the professors who are the most proper—the only judges of his capacity and acquirements. He is stimulated to study by the desire, not only of acquitting himself in a creditable manner in presence of his teachers, of the exercises required of him before he can obtain the desired degree, but also of possessing a diploma, and of being held in esteem by the mass of his fellow students. Had the plan been persevered in in France, these advantages could have been obtained without detriment to the profession, or to the sick in general; for the baccalaureate and license need not, under any circumstances, confer the privileges appertaining to the doctorate—that of practicing; and the student would have attached as much importance to the title—would have sought after it with as much ardour—would have felt as much mortified had he failed in obtaining it, as if it really conferred those privileges, particularly as he would have known that the honour to which, by obtaining it, he had been thus raised, was a stepping-stone to the highest in the profession. The inconveniences resulting from the abandonment of the plan in question, are, it is true, somewhat obviated by the multiplicity of examinations, and the period at which these are held. But a title and diploma go a great way with a young man, particularly in France, and the circumstance of passing through an examination will never excite much emulation unless success in that examination is to lead to some distinction.

Unlike what took place before the revolution, medical and surgical instruction is now obtained in the same school. There are two sets of doctors—those in medicine, and those in surgery. The studies required for these two varieties of the same grade are precisely the same, and the only difference in the mode of reception consists in some modifications in one or two of the examinations—the examiners being apprized, in due time, of the intention of the candidate to obtain the one or other of those degrees. But of this we shall speak more in detail presently.

We now pass to the subject of the examinations. Before presenting himself to these the pupil must of course have complied with every prerequisite for graduation, and must in particular present the diplomas of his degrees in letters and sciences. Nevertheless, officers of health, who have served in the capacity of military surgeons, as well as those who have taken out inscriptions in a secondary or in a military medical school prior to the 1st of January, 1823, are dispensed with presenting the diploma of bachelor of sciences. The degree of master of arts obtained in a foreign university, cannot supply the

place of that of bachelor of letters. Pupils who on the 1st of January, 1826, had more than one inscription, were allowed, until the 1st of January, 1827, the choice between two modes of examination. Agreeably to the old mode, the pupil who had taken out sixteen inscriptions was, at the expiration of the last quarter, allowed to offer himself as a candidate for the degree of doctor in medicine, on submitting to five examinations and defending a thesis. Anatomy and physiology constituted the subjects of the first examination; pathology and nosology of the second; materia medica, chemistry, and pharmacy of the third. At the fourth examination the candidate was tried on hygiene and medical jurisprudence; while the fifth examination was appropriated to the medical or surgical clinics, according as the candidate aspired to the degree of doctor of medicine or doctor of surgery.

Agreeably to the new mode, the subjects of the examinations are arranged in the following order:—

1st. *Examination three months after the eighth inscription.*—Medical Natural History, Medical Natural Philosophy, Medical Chemistry, and Pharmacologia.

2d. *Examination three months after the tenth inscription.*—Anatomy and Physiology.

3d. *Examination three months after the twelfth inscription.*—Medical and Surgical Pathology.

4th. *Examination three months after the fourteenth inscription.*—Hygiene, Legal Medicine, Materia Medica and Therapeutics.

5th. *Examination three months after the sixteenth inscription.*—Medical Clinic, Surgical Clinic, Midwifery.

Candidates who have undergone the examinations of the eighth, tenth, twelfth, fourteenth quarters, (trimestres,) are alone allowed to take out the tenth, twelfth, fourteenth, and sixteenth inscriptions.

From the 1st of November, 1829, every candidate without exception have been compelled to undergo their examinations agreeably to the preceding mode. These examinations are conducted by two professors and an agrégé. Each of them has an adjunct who supplies his place in case of his being absent. The examinations take place for four candidates at one time, their names being registered according to alphabetical order. They commence at one o'clock, and terminate at three; so that each candidate is examined during half an hour, or during ten minutes by each examiner. Whether the candidate be examined agreeably to the old or to the new mode, he is required to hand in, at the fifth examination, the details of six observations collected at the bed-side of the sick. Of these, four at least must have been collect-

ed in the clinics of the faculty, and their authenticity must be certified by the professor. Candidates for the degree of doctor in medicine present the histories of four cases of internal, and two of surgical diseases, while those who aspire to the degree of doctor in surgery, are required to furnish four of surgical, and two of internal diseases.

The candidates are classed, for their examinations, agreeably to the date of their inscriptions, and under no pretext is the name of the examiners communicated to them beforehand.

For the examination on anatomy and physiology, the candidate makes on the dead body an anatomical preparation previously designated to him. On a subsequent day he answers to several anatomical and physiological questions, having a bearing on the nature of the preparation he has made, and gives a demonstration on the skeleton of the different parts of osteology. At the examination on *materia medica*, chemistry, and pharmacy, the candidate answers demonstratively to the questions put to him on medicinal substances. The examination on internal and external pathology, (medical and surgical,) is conducted in Latin. It takes place at one sitting. The same holds in respect to the examination on hygiene and legal medicine, in which the candidate is required to write the formula of a report on a subject proposed at the moment.

At the examination on the clinics, questions proposed beforehand are drawn out by lots, (*tirées au sort.*) They have reference to fixed and well-known practical cases. To these questions the candidate must answer in Latin and in writing. With this view he repairs to the school, at least three hours prior to the examination, and there prepares his answer without the assistance of any one. In presence of the examiners he answers *viva voce*, in Latin, to all questions which his own written answer may elicit. When the candidate aspires to the degree of doctor of medicine, a greater number of medical than surgical questions are proposed to him at this examination. The reverse is the case when he wishes to obtain the degree of doctor of surgery. Under these circumstances he is moreover obliged to perform on the dead body all the operations required, in soft and hard parts, for the cure of the diseases which form the object of the examination.

It occasionally happens that a candidate is found incompetent of particular branches, and is required to attend to these for some time longer. In such case this extension of studies, and the examinations consequent upon it, must always, unless by special leave, take place in the same faculty.

When a candidate presents himself with the view of defend-

ing a thesis, after having undergone his examinations in another of the French faculties, the president and the examiners must be apprized of this circumstance.

After expressing, by inscribing his name on a register kept for the purpose, his intention of defending his thesis, the candidate deposits the manuscript at the office of the administration, and the dean designates a president who examines and signs it, and becomes responsible for the principles and opinions it contains, in relation to religion, public order, and morals. If he considers the thesis suitable for forming the subject of the sixth examination, the president makes a report to that effect. Should this not be the case, his decision is referred to the faculty. He superintends the printing, signs the proof sheets of the essay, which cannot be distributed unless he certifies that all the formalities have been complied with. Should a thesis, when distributed to the public, be found different from what it was in the manuscript submitted to the examination of the president, or should it have been printed before the manuscript had received the sanction and signature of the latter, it would, together with the sixth examination, if the latter had taken place, be annulled. The candidate would be refused his diploma, and obliged, before obtaining it, to defend a thesis on another subject, after a lapse of time fixed by the royal council; and that too, independently of other academic punishments that may be incurred in consequence of any objectionable principles contained in the printed thesis.

The title page of the thesis must express the object of the author; whether he aspires to the doctorate in medicine or in surgery. No unpublished medical observation can be inserted in a thesis without the written approbation of the physician who has attended the patient. The dedication of these essays, unless made to a parent, must be authorized by the person to whom it is addressed. In such cases also, the approbation of the faculty must be obtained. The candidate deposits a considerable number, (140,) of copies of his thesis, which are distributed as follows:—

To the University, 2—Rector, 1—General Inspectors, 2—Royal Academy of Medicine; 1—Faculties of Montpellier and Strasburgh, 2—Royal Library, 1—First Physician of the King, 1—Professors, 24—Aggrégés, 36—Argumentation, 6—Library of the School, 5—Treasurer, 1—Librarian, 1—Conservators of the Cabinets, 1—Chief of the Anatomical Works, 1—Chief of the Chemical Laboratory, 1—Assistant Librarian, 1—Assistant to the Conservator of the Cabinet, 1—Dissectors and Aids of Anatomy, 6—Chief of Clinics, 3—

Aid to the chemical department, 1—Aid to the botanical department, 1—Bureau, 5—Dresser, 1—Collection in Reserve, 35.

The same individual is engaged for the printing of all the theses; the form of these, the number of lines in each page, and the quality of the paper, are designated by the faculty, in order to ensure regularity in the execution of the rules just mentioned, and similarity in all the theses.

The thesis is defended before the president of the board, several of the professors, and two *aggrégés*. The act continues an hour. The president has no vote in the decision of the jury of examination, but may nevertheless take part in the deliberation. In case of an equal division of votes relative to the propriety of admitting the candidate, the opinion of those in his favour is adopted. Every certificate of capacity delivered by a faculty, must, before being converted into a diploma by the royal council, be approved by the rector, (whose office is filled at Paris by the dean,) and the certificate of approbation refers as much to the moral conduct as to the capacity of the candidate. The rector has consequently the right of refusing a diploma to one who does not merit it. The diploma is given by the grand master, who may suspend the delivery of it, referring this act to the council of state. He may also compel the candidate to go through his examinations a second time.

Doctors in medicine who wish to obtain the title of doctor in surgery, and vice versa, are required to sustain a fifth examination, and defend a thesis on a surgical or medical subject, according to the nature of the degree they wish to obtain. They are at the same time obliged to pay one hundred francs for the fifth examination, one hundred and twenty francs for the sixth, or thesis, and one hundred francs for the seal of the university, making a total of three hundred and twenty francs. But a doctor in medicine is not allowed to present himself to the fifth examination for the doctorate in surgery, before having defended his thesis in medicine, and the examiners must be apprized of his intention, of obtaining the one or other of these degrees, in their letter of convocation.

French physicians or surgeons who have graduated in foreign universities, or military officers of health, could formerly obtain with ease an exemption from the first four examinations. But since the 1st of January, 1815, this exemption is no longer allowed, except by means of a special *ordonnance*. By a decision of the faculty of Paris, dated 28th of February, 1822, studies made in foreign countries have been assimilated to those made in the secondary schools of France, provided, however, they have been made in well known Uni-

versities, or in places where it is ascertained, that a complete course of medical instruction can be obtained. Nevertheless, physicians who have graduated out of France, occasionally obtain the above exemption, and even one from the fifth examination. In that case they are merely required to defend a thesis, and to pay two hundred and twenty francs—one hundred and twenty for the examination and one hundred for the seal. They may also obtain the two titles of doctor of medicine and doctor of surgery, by defending two theses and paying four hundred and forty francs.

Pupils who have given proofs of capacity in the old schools, agreeably to the established rules, and who wish to exchange their certificates of provisional reception for a diploma, are obliged to declare whether they wish that of doctor in medicine or doctor in surgery. They may then obtain it by paying five hundred francs.

No one we presume will refuse to admit that the preceding regulations are wise and just; yet we cannot help thinking, that the professors at Paris have shown rather too exalted an opinion of their worth, by assimilating studies made in foreign countries to those made in the secondary schools of France. Were this compliment levelled at our schools, or even at the English and Scotch schools, it would not be a matter of astonishment, because the quantum of instruction that may be derived in them is exceedingly limited when compared with that afforded in France. But it cannot prove very agreeable to the schools of Austria and Italy, where the course of studies required for graduation, and placed within the reach of students, is, to say the least of it, as complete as at Paris itself.

In terminating this account of the requisites for graduation, and of the regulations of the schools of Paris, it remains to state, 1st, that every mark of disrespect towards the dean or any of the professors, is punished by the loss, on the part of the offender, of one or two inscriptions, or more severely if deemed necessary, and that, should the offence be repeated, it is punished by exclusion from the school during at least six months, or at most two years. 2d. That it is expressly forbidden to the students of a faculty, or of the various faculties of the same or of different orders, to form associations, without having obtained permission to that effect from the authorities of the place, and apprised the rector of the circumstance. 3d. That students are also prohibited from acting or writing collectively, as if forming a legally constituted corporation or association. 4th. That every student who is convicted of taking part, under any pretext whatsoever, in illegal assemblies, in revolts, fights, &c. is erased from the register of the faculty; his ticket of admission is at the same time withdrawn from him,

and he is prohibited from attending the lectures. 5th. That the price of medical education in France amounts to one thousand francs, independently of the expenses of publication of the thesis. Of this sum, thirty francs are paid for each examination, except the sixth, (that of thesis,) for which is paid sixty-five francs. The rest, or seven hundred and eighty-five francs, serve to defray the expenses of the sixteen inscriptions, for the first fifteen of which are paid fifty francs each, and for the sixteenth thirty-five francs. Besides these sums, one hundred francs are charged for the seal of the diploma, and three francs for the use of the gown worn at the time of examinations, &c.

Although the student may have paid for inscriptions at one of the secondary schools, he is obliged, if he wishes a diploma from one of the faculties, to pay the same sum demanded of other students who have not obtained such inscriptions.

We have thus presented in as small a compass as possible, an outline of the plan of medical instruction pursued in the three faculties of France, of the prerequisites for obtaining the title and rank of doctor of medicine and surgery, as well as the principal rules adopted for the proper government of the school. It will immediately be perceived, that many of the latter are of local interest, and only applicable to the state of society, to the character of the youths, and the nature of the government of France. Notwithstanding this, however, we do not know that some of them might not be adopted with advantage elsewhere, and even in this country. But, without insisting on the subject, we may be allowed to express the opinion, that the plan of instruction at present in operation in France, so far as regards the diversity of branches taught, the division of the studies in each year and each section of the full course, the number of the examinations, &c. is entitled to much commendation. We are not prepared at present to inquire whether some improvements might not be made in that plan—whether some branches of minor value are not taught, while others of greater importance are not attended to; for the necessity of reform is generally admitted, and occupies still the attention of the government and of the profession at large. Yet such as it is, the plan in question is so far superior to that in force in our schools—the effects of this superiority are so evident to every one who has been able to make the comparison between the graduates of both countries, and who is not biassed by prejudice, that were we called upon for advice by a young man about commencing the study of medicine, and were we able to select the place where he was to prosecute his studies, we would unhesitatingly give the preference to the schools of France over those of our own or of other countries, Germany excepted. We sincerely hope that the eyes of

our countrymen will, before many years have elapsed, be open on this important matter, and that the necessary reforms will be made in the plan of instruction actually in force among us. In making these remarks, it is far from our wish to disparage the merit, the learning, and the practical skill of American physicians. Indeed we are ourselves too much interested on this subject, to harbour such an intention. But let them be candid, and say whether the greater part of the knowledge, theoretical and more particularly practical, which the most distinguished among them possess, has not been acquired since they graduated, and often at the expense of human life? Whether they are not now sensible of the imperfection of their medical education? With industry on the part of the young physician, the effects of this deficiency may be, and has fortunately been, often remedied. But we are all aware that this industry is unfortunately seldom the lot of graduates, and painful as the confession may be, we are forced to admit, that the majority of our young physicians, after they have received the honours of the doctorate, do not study at all, or do so only in a desultory manner;—that they consequently remain very deficient in point of information, and hence very inferior to the graduates of the schools of the European continent.

As may have been perceived, medical education is only apparently cheap in France; for although lectures are delivered gratuitously, and the other expenses incident on the studies, as for dissection, &c. are but trifling, yet the inscriptions are expensive, and the amount paid for these, joined to the fees for examination and graduation, makes up a sum equal, or nearly so, to that which a medical diploma costs in this country. It is true that the sum, if divided by four—the number of years required for the studies, would make only about three hundred francs a year, (sixty dollars,) whereas the amount paid here for admission to the lectures, the expense of graduation, of dissection, of private instruction, without which a student can hardly get along with credit to himself, if divided by two—the number of years of attendance at the school required, would show a much larger annual disbursement. It is true also, that the expenses of living are much less in France, particularly at Montpellier and Strasburgh, than in our large cities. Yet, notwithstanding all this, as the difference of living four years instead of two, is to be taken into account, as the sum annually spent by the student there for his instruction and living, goes a great deal further than a much larger one with us; and as the whole amount is, therefore, (due regard being paid to this cause,) truly considerable, we are justifiable in saying, that medical education is only apparently cheap in France.

This dearness of medical education in France, joined to the impossibility of practising medicine or surgery lawfully without a diploma, and of getting admittance to the lectures without a ticket delivered only to regular students or to graduates, ensures in general, (for some improper subjects will creep in every where,) a bar against the admission in the profession, of individuals who are not of respectable parentage, and who are not likely to become useful to the community and an honour to the profession. Add to this, that in order to be entitled to take out an inscription, it is necessary, as we have seen, that the student should be a graduate in two other faculties. This of course cannot be done without some expense, and further ensures in a powerful manner, the effects to which we have already adverted. Nothing in our opinion is more injurious than *cheap* medical schools, allowing, as they do, particularly when unrestrained by the necessity of classical education and long periods of study, many chances to the introduction into the profession of individuals, who ought from their standing in society and deficient education, to be excluded from the honours of the doctorate. Those who contributed in framing the plan of studies adopted in France, were probably aware of these circumstances. Had they not fixed a high price on instruction, or rather on graduation, had they not required of the candidate degrees in other faculties, many would probably have been induced to study medicine—many would have obtained a diploma, and with it have been entitled to practice, who were fitter to cultivate the land or work at some trade. By adopting their present system, on the contrary, they have in a great measure secured admission to those only whose pecuniary means have enabled them to receive a good education, by which the faculties of the mind are early exercised and strengthened, and will not only prevent them from starving in the early part of their professional career, but also enable them to avoid the company of low and illiterate people, to mix with the more polished classes of society, and to govern themselves in their intercourse with the public generally, and with their fellow practitioners in particular, in accordance with the principles of sound morality and the feelings of amity and cordiality which are so strongly implanted in the bosom of every well-bred gentleman. Although we are willing to acknowledge that few men attain to eminence in the medical or in any other profession who have not their fortunes to make, we cannot help regarding pauper doctors—physicians belonging to the poorer and lower classes of the community, as a great nuisance, not only to the profession, but to the public at large; because, in consequence of their deficient education, they rarely acquire a sufficiently high standing, to obtain for them the advantages derived from professional intercourse

with their more polished and better instructed brethren, and because a man who on entering business is destitute of the means of support, or moves among the lower classes, is but too often induced, sometimes from sheer necessity and against his own inclination, at others, because he is undeterred by a sentiment of honour and a sense of the dignity of his calling, to make a trade of his profession—to endeavour to gain business by making low charges—to play the quack—and to caress and humour the whims of the public, in order to creep into notice. In our country we unfortunately see too many of these, not altogether on account of the cheapness of medical diplomas, for in some schools these are expensive; but owing to the facility of graduation in them all, though principally to the liberty which every one enjoys, in some states, of practising medicine without having received a license, to that effect, from competent authorities;—circumstances which induce many to tender their services as practitioners of medicine, though deprived of the desirable degree of preliminary education, and sometimes without any medical or surgical instruction. Of these, one out of a hundred may, by dint of industry, emerge through the crowd of nullities by whom he is surrounded, and acquire a merited reputation for learning and practical skill; he may also, by virtue of an innate sentiment of honour, correctness of deportment, and delicacy of feeling, gain the esteem and countenance of his brethren and of the respectable portion of the community; but the mass of such physicians will continue to grope in the dark, will never conduce to the improvement of their profession, but will become mere routine practitioners, and exercise their art, to the great detriment of the public and to the discredit of the profession.

We now pass to the subject of the professors of the medical faculties of France, and of the manner in which they are selected. Previous to the first revolution, there was, we believe, but one order of professors in the various medical schools of the kingdom. These professors were appointed after a concours or public trial, by the king, on the presentation of the judges, who consisted of the chancellor, when there was one, (as at Montpellier, where the school of medicine was held, though improperly, in the light of an university,) of the dean, and of a number of the professors. The chancellor, who was the chief of the school, was appointed directly by the king, without the formality of a presentation. In those faculties, where there were no chancellor, the duties of chief devolved on the dean, who was selected in the same way.

When, in 1794, the schools of Paris, Montpellier, and Strasburgh, which, like all the other establishments of the kind, had been abolished a few years before, were reorganized, a professor and an adjunct were

attached to each chair. In the progress of time, however, these adjuncts became assimilated to the titular professors. From this, it followed, that the number of these was doubled; and that, as the number of chairs was not increased, except at Paris, where a professorship of medical bibliography was created, there were, in fact, two professors for each chair. By the same law, (4th Dec. 1794,) the professors were directed to be appointed by the committee of public instruction, on the presentation of the commission of public instruction. By the general law on that subject, dated 11 Floreal, an x, (10th May, 1802,) it was directed that the professors should be nominated by government; from among three candidates; the first of whom was presented by one of the classes of the Institute, the second by the general inspectors of the studies, and the third by the professors of the school. This arrangement continued in force until the period of the organization of the university by Napoleon, on the 17th of March, 1808. By the decree of that date, it was ordered that, at the first formation of that gigantic establishment, the grand master should nominate to all the chairs in each of the faculties; but that at subsequent periods all vacancies occurring in them, should be filled by individuals selected after a public concours.

Shortly before the return of Napoleon from Elba, on the 17th of February, 1815, a royal ordonnance, based on the report of a commission appointed by government to inquire into the state of the instruction imparted in the medical schools of France, and to suggest the modifications required in those establishments, appeared in the *Moniteur* and *Bulletin des Loix*, by which the concours was abolished in the faculty of medicine of Paris. By this same ordonnance, it was ordered, that the professors should henceforward be selected from among four candidates, two of whom were presented for that purpose by the faculty, the other two by the academical council. But this arbitrary change was not effected without eliciting an expression of disapprobation on the part of the entire faculties of Montpellier and Strasburgh, which, in conjunction with the dean of the faculty of law, and several individual professors attached to the medical faculty of Paris, defended courageously the mode by concours. On the 30th of March of the same year, this ordonnance was annulled by an imperial decree, and the university was reëstablished on the same footing as prior to the restoration of the Bourbons. But this decree in its turn, was repealed, and the ordonnance of 17th of February, 1815, was reinforced in what relates to the subjects in question, by a royal decision, dated February, 1816.

By the ordonnances of November, 1822, and February, 1823, which effected the dissolution of the old faculty, and the reorganization

tion of the school of Paris; and by subsequent ordonnances, which occasioned similar changes in the schools of Montpellier and Strasbourg, a new arrangement was made in the board of teachers attached to these establishments, and in the mode of nominating them. This arrangement consisted in appointing two sets of teachers—professors properly so called, and *aggrégés*, or adjuncts.

The mode of election by *concours* was rejected for the former; but admitted for the latter. This occasioned at the time, and for a long period after, much discontent among the members of the profession, and the medical journals were clamorous in their demands for the reëlection of the *concours* for the selection of the professors themselves.

While on this subject, we may be allowed to express the opinion, that the method of choosing a professor by *concours*, presents many advantages over the other, or that by presentation, but is not itself free from disadvantages. An individual, who is aware that he is to appear before a large and enlightened assembly, and that he must there answer to all questions put to him by judges appointed for that purpose; that this severe trial is to be repeated several times, and in various ways; and that the subjects on which he is to be examined are diversified in their nature; that independently of his examiners, a large concourse of individuals will judge of his capacity; such an individual, we say, will take very good care not to present himself, unless well qualified on all the branches on which he is to be examined. This proves a source of emulation to all those who aspire to the honour of the office to be filled, and the persons who make the final selection of the professor, are certain of choosing among men who are qualified, and have given public proofs of their capacity and learning. Add to this, that a bar is put to every thing like favouritism; since the government, if it retains the power of the final decision, can only choose among the most distinguished of the candidates, and must, unless it tramples on every principle of justice, be guided in its selection by the opinion of the judges. The method of selecting on simple presentation offers none of these advantages, inasmuch as the candidates may often have given no public proof of capacity, and the choice may be made merely to gratify private feelings, or reward private services, and not in consequence of a decided superiority on the part of the successful candidate.

Indeed, we shall not be easily induced to believe with Dr. JOHNSTON, that the voice of the public, and the wish of supporting character, will act sufficiently in preventing this abuse, (nomination of unqualified persons by interest and favour,) from being carried too far; “and that it is to be supposed that, in general, the council of instruction is too

enlightened, and too anxious to obtain the good opinion of the country, to allow, in many cases, power to triumph over merit." The appointments in 1823, of seven or eight professors, totally unqualified for fulfilling the duties of the responsible offices to which they were thus raised, is a sufficient proof of the disadvantage of the method by simple presentation. Nor is it to be supposed that such an occurrence, though happening at the time of the reorganization of the school, was not to be apprehended afterwards; for no effectual bar to a repetition of it was established, and there is little doubt that had the plan then adopted, continued in operation, the selection of improper individuals would have frequently happened—a circumstance which could not have resulted from the mode of selecting after a public concours.

Even in admitting that such effects were not to be feared from the method by presentation, and that those entrusted with the duty of presenting candidates, might always have been guided by principles of justice, it may be doubted whether they could always have had it in their power to discover among numerous competitors, such individuals as possessed all the qualifications requisite in a professor, or that they themselves would have been competent to decide on candidates to teach branches totally different in their nature from those entrusted to them. How, for example, could a professor of midwifery decide on the qualifications of a chemist, of a botanist, &c.?

The concours is certainly more efficacious than this method, because every candidate gives a public specimen of his qualifications, of his learning, eloquence, talents in imparting his knowledge, &c. and because a narrow field is offered for the operation of intrigue, coteries, personal antipathies, and partialities. "*Il a l'avantage de mettre au jour des talens qui peut-être seraient demeurés inconnus; il fait distinguer surtout les qualités les plus nécessaires à un professeur; la netteté dans l'exposition, cette chaleur d'élocution qui s'empare des étudiants, qui les attache à la science.*" The concours is, for the same reasons, superior to the mode of nomination by the directors, or trustees of a school; for these are not generally members of the profession, and cannot, therefore, judge of the qualifications of individuals destined to teach one of the branches of that profession. They must rely on the opinion of the public, and we know that the public pronounce individuals to be great physicians, who are possessed of the slenderest talents and acquirements, and who would, therefore, make but poor professors; or they must rely on the opinion of the members of the faculty, or of physicians generally. But in the first case, the disadvantages and difficulties to which we have alluded when speaking of the mode by presentation, would inevitably result—in the second, men too advanced in age would be regarded as the fittest; for

few physicians would feel sufficiently free from jealousy and antipathy to recommend for so high a station, individuals younger than themselves, or even of their own standing—there being, in general, a disposition in the elderly members of the profession to look down with a sort of contempt on their younger brethren, without appearing to be aware of the fact, that all improvements in the science have been effected by physicians in the prime of life, and that the best professors are to be sought among the enthusiastic, zealous, active—in other words, never among the old.

But as we have said, the mode of electing by concours is not free from some disadvantages; the principal of which is, that individuals of slender talents, but who possess considerable firmness and composure, and a ready mode of answering questions—in a word, who are endowed by nature with a good share of impudence, will often show to much greater advantage in a public examination, than persons of ten times more talents, but who are timid and diffident of their own powers. Another disadvantage results from the natural unwillingness of persons who have already secured some reputation and fame, by their writings or intercourse with society, to enter into competition with younger, less learned, but more active and ready individuals, and thereby run the risk of losing both. Some disadvantage may also arise from the partiality of judges; but it is easy to guard against this by rendering the concours public, and composing the jury, which ought to be in part selected by the candidates themselves, not only of professors of the faculties, but of a certain number of physicians not attached to the latter. On the whole, however, neither this disadvantage, nor the others to which we have alluded, can be compared with those presented by the other methods.

But we return from this digression. If after the reorganization of the schools, the advantages of the concours were not enjoyed, the disadvantages of the mode by presentation, were in some measure obviated by the fact, that after the first nominations, in virtue of which so many unqualified individuals got admittance into the school of Paris, professors were chosen only from among the *aggrégés*, who, as we have seen, were appointed after a public concours.

Such being the case in regard to these *aggrégés*, and the organization of this body of subordinate professors being rather complicated, and without a parallel in any school with which we are acquainted, we shall doubtless be excused for dwelling a few moments on the subject. After doing this, we shall present an outline of the changes that have been effected in the mode of selecting professors since the

revolution of July, 1830, and terminate with some remarks on the body of professors, their pay, and the duties assigned to them.

At the period of the formation of the new school, at Paris, in 1823, twenty-four *aggrégés* were appointed by government. But the full number of these attached to the school amounted to thirty-six; the twelve additional ones, whose duties were to commence three years after, being directed by the ordonnance of the 2d of February, 1823, to be elected by *concours*, before the completion of the first scholastic year. In virtue of this decision they were chosen on the 19th of November, 1823, and definitively nominated in July of the next year. Those first appointed were divided into three sections, each section being subdivided, as we shall see presently, into several series. The whole body was divided into three classes: 1st. The *stagiaires*, comprising those lately elected, who during three years were not called upon to perform any duty. 2d. *Aggrégés en exercice*, or those who performed duty, or were liable to be called upon for that purpose—to supply the place of a professor—take part in the examinations, &c. Their period of duty extended to six years—one-half of their number being renewed every three years. The third class comprised an unlimited number of *aggrégés*—all those who had become *free*, after passing through the two first grades, denominated in French *le stage* and *l'exercice*. At the period of the first formation of the school, the twenty-four *aggrégés* who were then appointed were directed to enter forthwith on duty, *en exercice*, and it was directed that one-half of their number, whose names would be drawn by lot, should be renewed at the expiration of three years. It was further ordered, that the subsequent renewals should be effected in such a way, that at each of them twelve new *aggrégés* would be elected and enter the *stage*, twelve would be ready to perform duty, *passeraient en exercice*, and twelve would become *free*. The *aggrégés* of the three classes had equal and the exclusive right of becoming candidates for any vacant chair in the faculty. The *aggrégés en exercice* were divided into three sections—1st, medicine; 2d, surgery; 3d, accessory sciences. The first of these comprehended ten—namely, two for pathology, one for hygiene, one for therapeutics, four for the clinics, one for legal medicine, and one without any special branch. The section of surgery was composed of eight *aggrégés*—pathology two, operations and dressings one, clinics three, midwifery one, midwifery clinic one. The section of the accessory sciences consisted of six—of whom one was attached to anatomy, one to physiology, one to medical natural philosophy, one to chemistry, one to medical natural history, and one to pharmacologia. It results, therefore, that

every three years, five *aggrégés* for the first section, four for the second, and three for the third were elected, unless some promotion to a professor's chair took place from among the *aggrégés en exercice*, in which case the vacancy thus occasioned was filled by the election of an additional *aggrégé*.

The *aggrégés* were alone allowed to deliver private lectures. This privilege was enjoyed by the three classes, the *stagiaires*, those *en exercice*, and the *free*; and no authority could deprive them of it, except by virtue of a decision of the council of the university. We have said that after the first formation of the school, the situation of *aggrégé* could only be obtained after a concours; to this it is necessary to add, that the grand master of the university still retained the power of giving, with the approbation of the faculty, of the council of the academy, and of the royal council, the title of free *aggrégé* to doctors in medicine or surgery, who had attained the fortieth year of their age, and who had distinguished themselves by their writings or by their success in the profession. The number of those could not, however, exceed ten, and they only enjoyed the privilege of becoming candidates for the chairs of clinic. The *aggrégés* received no regular salary, but were paid whenever called upon to perform duty in the school. Those who were required to lecture for a professor, obtained from the latter a sum equivalent to one-half the regular salary received by him, during the time they performed duty; as well as half of examination fees, &c.

The following is an account of the regulations of the concours. Three months before the opening of the latter, which was announced in the public prints, the aspirant, who was required to be a Frenchman by birth, and to have attained the twenty-fifth year of his age, caused his name to be inscribed at the bureau of the faculty, depositing there at the same time; 1st, his diploma of doctor in medicine or surgery; 2d, his certificate of birth; 3d, a certificate of good conduct and good morals, signed by the mayor and confirmed by the prefect of the department; 4th, a certificate signed by three doctors and countersigned by the rector, attesting that he had not been instrumental in circulating addresses on the public roads, &c. and had not sold secret remedies.

A few candidates, (not more than three for each concours,) were dispensed, by the grand master with the advice of the faculty in which the concours was held, or of that in which they had obtained their degrees, with being of the age required. Two months before the opening of the concours, the list of candidates was temporarily closed at a meeting of the faculty, and forwarded to the grand master of the university. The royal council, after investigating the claims of each

candidate, closed the list definitively and forwarded it to the dean, who two weeks before the commencement of the examinations, gave notice to the candidates of their being admitted to take part in these. The board of examiners was composed of at least seven members and a president, who had the casting vote in case of an equal division. They were all named by the minister of public instruction. Some of the judges could be chosen from among physicians not attached to the faculty; but there was always required to be a majority of professors. Three judges were appointed to supply the place of the others in case of absence from sickness or other causes. Five judges, independently of the president, could pronounce in regard to the merits of an *aggrégé*, and to his claim to election, or the reverse. The names of the candidates were called over on the day and at the hour fixed upon for the concours; those who were absent at that time being excluded from the examinations. The candidates could reject any of the judges, but were obliged at the same time to state their reasons for doing so; the remainder of the judges being authorized in pronouncing whether or not the reasons assigned were of sufficient weight to justify the rejection. In case the decision of the board was unfavourable to the candidate, he could still appeal to the royal council. Two relatives of the candidate, uncles, brothers, or first cousins, could not sit as judges or supplementaries at the same concours. The rank among the candidates was determined by the priority of their admission to the honours of the doctorate.

The concours was divided into three parts. 1st. Medicine. 2d. Surgery. 3d. Accessory sciences. The principal exercises had reference to these three objects, and the candidates were accordingly divided into three series. When the interest of the school required it, the royal council, at the request of the faculty, established special exercises for each of the accessory sciences.

Each part of the concours was composed of three exercises. 1st. A written composition. 2d. An oral lesson. 3d. A thesis.

Of the written composition.—Three questions prepared by the judges were thrown into an urn, from which the oldest candidate drew out the one to be proposed. This being done, all the candidates were shut up in a room, under the superintendence of two of the judges, and were there required to compose a dissertation in Latin on the subject stated in the question proposed. After a period of from five to eight hours, during which they were not allowed to communicate with any one, or consult any books, they deposited their compositions, to which they previously affixed their signature, into a box, which the president sealed up. This first exercise was not public. Those

that followed took place in the lecture room and in presence of all who were willing to attend.

Of the Oral lesson.—The judges designated as many subjects as there were candidates. Each of these drew one of the subjects, and prepared upon it a lecture of three-quarters of an hour in duration, and for the composition of which he was allowed three full days. During the lecture only simple notes could be made use of. Several of these lectures occupied the attention of the judges during each sitting, which lasted three hours. After this exercise of the oral lesson, the written compositions were read out by their respective authors.

Of the thesis.—The judges designated as many subjects as there were candidates; each of whom drew one on which he was obliged to compose, and print at his own expense, a thesis in Latin. Of this thesis, ten copies were sent to the grand master, and one to each of the judges and candidates three days prior to its defence. This took place only after an interval of twelve days from the moment the subjects were distributed. The argumentation was conducted in Latin among the candidates. The three hours which this exercise occupied were divided in such a way, that each candidate discussed the subject during at least half an hour, and never more than one hour. If the candidates were numerous, only six were allowed at one time to take part in the discussion. If, on the contrary, there was not a sufficient number of them to occupy the three hours, the president designated some of the judges, or the dean, to argue with the candidates. When the argumentation took place among the latter, it always commenced with the one who was to defend his thesis immediately after. In this argumentation the disputants could attack the principles developed in the thesis—the solutions which the author had offered to the questions proposed. They could likewise propose other questions on the subject of the thesis, and combat the answers given by the defendant.

Within twenty-four hours subsequent to the last sitting of the concours, the judges assembled, and elected, by a secret ballot, and by a majority of the whole, those they considered entitled to preference. The minutes of the operations of the concours, after being signed by all the judges, were forwarded to the grand master. The nominations might be impugned by the unsuccessful candidates, but only on the ground of a violation of the prescribed forms. These appeals were addressed to the grand master, judged by the royal council, and could not be received after the tenth day following the termination of the concours; one day more being allowed for every twenty leagues, (ten myriametres,) from the place where the faculty was situated.

The final nomination of the candidate did not take place before the expiration of this term, or the rejection of the appeals, (*réclamations*.) Whenever the nomination was annulled, the concours was gone over once more, but only among the same candidates.

It is from among the *aggrégés*, and from them alone, that the professors were selected by the grand master—the choice being made out of six candidates, three of whom were presented by the assembly of the faculty, and three by the academic council. In these presentations the professors and *aggrégés* of the other medical faculties of the kingdom might be included.

It has already been remarked, that the disadvantages of the method of appointing professors on *presentation* was somewhat obviated by selecting them only from among the *aggrégés*, who were obliged before obtaining this situation to pass through the ordeal of a concours. These disadvantages were not all obviated, however, for as only very young men, who are as ill-suited as old men to undertake the responsible office of public teachers, were likely to feel disposed to submit to these public trials, the selection of professors would almost invariably have been made from among the junior members of the profession unless vacancies had not occurred soon in the faculties, and the *aggrégés* had thereby had time to advance in age. The other alternative would have been in case of a vacancy in a chair of clinic, to select one of the *aggrégés* who had been elected without the formality of the concours, by virtue of the right vested to that effect in the grand master of the university. But in that case the advantages of the concours would have been annulled; for if some individual could be appointed to a professorship without undergoing the trials of a public concours, where was the necessity of requiring these trials of others? But as every three years an addition was made to the number of these subordinate professors, there would always have been a large number of young candidates for every vacancy that occurred in the faculties, and intrigue, influential protection, and a thousand other causes, might have induced the faculty in which such vacancy occurred, as well as the academic council, to present, and the government to select one of them in preference to an older, and more experienced, and more worthy competitor. It might also have happened, and did actually happen, on several occasions, as in the appointment of M. CRUVEILHIER, to supply the vacancy occasioned by the death of BECLARD, and of M. MOREAU as successor of DESORMEAUX, that with a view to please the government, the faculty or the academic council would place at the head of the list of presentation an individual agreeable to the former, and thus give an apparent sanc-

tion to the preference of him over more deserving candidates. This circumstance was particularly to be feared at an early period after the reorganization of the schools; since the majority of the members of the faculties were mere tools in the hands of government, and the greater number of *aggrégés* had been appointed directly by the latter, and were, with some exceptions, less distinguished for talents than for subserviency to the ruling power and to the priesthood.

Physicians who had attained a certain *degré* of eminence as practitioners, who had acquired considerable reputation by their writings, or as lecturers, could not feel disposed to enter in competition with young men at a minor *concours*, who, nevertheless, might have made excellent professors, and would willingly have gone through all the exercises of a *concours* opened for the purpose of supplying a vacancy in a faculty, and particularly if they had had to compete with men of equal standing with themselves. Indeed, the establishment of the *aggrégés*, with the privileges accorded to them, at the same time that it was unjust, led to great disadvantages, for it not only prevented the physicians to whom we here allude from delivering private courses of lectures—from acquiring the habit of teaching as well as obtaining renown and profit—and from being useful to students; but prevented them from ever becoming candidates to a chair in the faculties; while it accorded these privileges, at the first formation of the schools, to some individuals unknown as writers, lecturers, or even as practitioners. The monopoly, therefore, remained for some time, agreeably to the plan adopted, in the hands of a few who in the commencement had all been appointed by government; and the nominations to vacant chairs was sure to be made from among these, until no more of them remained to be promoted. On the whole then, we believe that the old plan of electing professors themselves by *concours* is the best that can be devised—far preferable to the one adopted in 1815, and even to the one substituted in 1823.

From the preceding account of the manner of conducting the *concours*—of the different exercises to which the candidates were obliged to submit, it will be perceived that it was not the easiest thing in the world to become an *aggrégé*—that it required much preparation, and was well calculated to excite emulation. The consequence of this was, that the greater number of these *aggrégés* were men of talents and information, and would one day have become competent to the task of assuming, with credit to themselves, and advantage to the school, the duties of a professorship. The exceptions to this were found principally among those who at the period of the organization of the schools were appointed without a *concours*, and had

obtained the situation through means of protection and intrigue. The result in question would have been greatly enhanced by the training they underwent during the period of the *exercice*. Nothing can we believe point out more forcibly the excellence of the plan and method of instruction pursued in the schools of France, than the fact that young men recently from the benches of the lecture rooms can place themselves on the list of candidates, and go through the whole of the exercises with considerable *aplomb*, and often with success. We fear that a similar result would not often be obtained in our medical schools, from which young graduates issue with a comparatively small stock of theoretical, and generally without the least practical knowledge. Clever as many of the members of the profession in America become as practitioners after a few years attendance on the sick, we are inclined to think that few among them would acquit themselves with honour of the arduous duties to which the *aggrégés* of France were subjected. The medical education obtained in this country is too superficial, and in general our habits of study are too desultory, to allow us to look forwards for any other results. We cannot help thinking that our schools, and even the science of medicine among us, would be much improved were a number of *aggrégés* or adjuncts to be appointed, and were the selection of professors to be made from among them. So far we have nothing of the sort, and if we mistake not, the few adjunct professorships in our schools give no additional claim to the chair when the latter becomes vacant. But as things now stand the arrangement is perhaps the most proper, as these situations are obtained, not after public trials, but through protection and favouritism. Some private associations of lecturers in our country are viewed by many as the legitimate nursery of professors. But we confidently hope, that those who have charge of nominations will never regard the subject in this light. It would be encouraging monopoly, since the vacancies occurring in these institutions are filled, not after a *concours*, where all physicians would be admitted as candidates, but by a simple appointment made by the existing members. The whole power is placed in the hands of a few individuals who are likely to be guided in the choice of their future colleague, more by friendly feelings and interest, than by the consideration of talents. Whenever the chance of admission is not equal for all, the pretensions of these institutions, of being the source whence professors are to be obtained, should be discountenanced, for if once admitted, it might establish claims, or confirm pretensions, that might hereafter be productive of incalculable mischief, and even transfer the right of appointment from its legitimate source to others, or at least render it a nullity.

Important, however, as we may regard the addition of those *aggrégés* to the regular members of the medical faculties of France, and their election after a public concours, viewing the mode in which professors themselves were elected, we do not wish to be understood as bestowing praise on every detail of the organization of that body. There was indeed a point in which it would ultimately have failed, and which would have tended to defeat the object for which they were instituted. It has already been stated, that twelve new *aggrégés* were added every three years to the number already existing. Besides this, all the vacancies occurring, either in consequence of death, resignation, &c. were immediately filled up at a new *concours*. It resulted as a natural consequence of this circumstance, that in the course of some years, the number of *aggrégés* would have been very considerable, and that, if some modification to the plan in force had not been adopted, the number would have embraced all the physicians of the cities where the faculties are located, or at least all those who felt disposed to aspire to either the honour of the *aggregation*, or of a professorship. Under these circumstances, the chance possessed by each, of being chosen to fill a vacancy in the faculty, would have been no greater than that enjoyed before by the members of the profession generally; since, instead of choosing among a privileged few, the faculties, the academic councils, and the government, would have had to make a choice from among the privileged *all*. This choice would then often have been just as much the result of intrigue and management, as if the candidate had been selected from the mass of the physicians within the precincts of the academy; and the other privileges attached to the situation would have ceased to be of any advantage, since they would have been enjoyed by all. In fine, things would have been just as if there had been no *aggrégés*; except, however, that to become a professor, it would have been necessary to pass through two ordeals—the *concours*, and the presentation, instead of one as formerly. We suspect also, that occasionally fewer applicants would have appeared than there were places to be filled, and that the severity of the exercises would have been necessarily relaxed, in order to ensure the admission of as many candidates as were required by law to fill the twelve places of the *stage*; for it would have proved an awkward position to have had a deficiency in the number of these. It would have destroyed the symmetry of the whole arrangement, and not permitted the possibility of affording substitutes for those whose term of duty had expired. This actually took place in one of the provincial faculties. Already, indeed, before the last revolution, the number of these *aggrégés* at

Paris, and in the other faculties, was too large, and the source whence candidates to vacancies in the schools were to be derived had been too much extended, so that, in the choice for a professor, the administration was left too large a field for the exercise of its partialities, which could not help falling often, as it occasionally did, on the less worthy individuals.

Such was the organization of the faculty and the mode of electing professors when the revolution of July, 1830, broke out. In our last communication we stated that by the ordonnance of Louis Philip, dated the 5th of October, which revoked the obnoxious ordonnances of 1822 and 1823, it was ordered that vacancies occasioned by the death of some of the old professors, who were reinstated in their chairs, should be filled, as formerly, by a public *concours*. It remains now to state, that the same formality was enjoined in all subsequent elections. This measure, which was demanded by a considerable majority of the profession, not only as a matter of right, because it had been established by law and abolished illegally by an ordonnance, but also as the most proper to ensure the admission into the faculty of men of talents, and the exclusion of ignorant pretenders, was, however, opposed by some who preferred the mode by presentation—by others again who advocated the method of simple nomination by the academic council, by general election among all the physicians of the place, &c. But the partisans of these methods were few in number in comparison with those who advocated that by *concours*, a circumstance which doubtless contributed in confirming the government in the idea of prescribing the latter in all vacancies that might subsequently occur in the faculties.

But before we proceed any farther we must be allowed to correct an error which crept into our last article. It is there stated, that in consequence of the changes effected in the faculty of Paris by the ordonnance of October, 1830, the body of the *aggrégés* was necessarily suppressed. We should merely have stated that the *privileges* conceded to these supplementary professors—of being alone allowed to deliver private lectures and the only class eligible to professorships, both of which were violently opposed as unjustifiable monopolies and as preventing emulation, were suppressed by that ordonnance.

The body itself, thus shorn of its obnoxious privileges, and reduced in its functions to supplying the place of absent professors, and to a participation in the examinations, was retained.

“Cette institution,” to use the language of the Duke of Broglie, in his report to the king, “offre de grands avantages sans aucun inconvenient: les *concours* par lesquels on y parvient mettent au jour les talens naissans; ils fournissent à

la faculté des sujets qui se forment sous la direction de professeurs expérimentés, deviendront d'excellens candidats pour les concours aux chaires, et n'excluront pas cependant ceux qui auraient pu se former par d'autres moyens; il n'est par indifférent non plus que ces jeunes agrégés assistent aux examens des docteurs, et que par le mode de rotation établi, ils changent successivement, tandis que le corps de professeurs demeure permanent; c'est une surveillance bonne à exercer sur la sévérité des examens et qui aura même indirectement de l'influence sur les cours, car les examens, les questions que l'on y fait, les réponses que l'on obtient, sont un excellent moyen de s'assurer que les leçons des professeurs suivent les progrès de la science, et que les cahiers une fois préparés, ne demeurent par la base des cours, lorsque des découvertes importantes ont changé les doctrines qui en faisaient le fond."

But while reëstablishing the concours for all the chairs in the faculties of medicine of France, (for the minister states, in his report to the king, from which we have made the preceding extract, that the principles on which the projected ordonnance, that of the 5th of October, is based, must be equally applicable to the schools of Montpellier and Strasburgh,) the government introduced some modifications in the mode of conducting it. The argumentation is omitted, on the plea, that in the heat of the debate, candidates are sometimes carried beyond the bounds of decorum. Among the elements on which the judges are to establish their decision, a discussion on the anterior services and writings of each candidate is introduced. The trials at a *concours* for the chairs of clinic are in great measure limited to the above discussion, and to a few other exercises of a very trifling character. The whole exercises are gone through in French, and government, in order to place things on the old footing, gives up the right of selection from among several candidates; a right which was held by the former government in the concours for the agrégés.

The following will present a full view of the regulations of the concours.

SECTION I.—*Composition of the Jury of the Concours.*

Article 1st. The jury of the concours is composed, 1st, of eight professors of the faculty of medicine of Paris; 2d, of four doctors in medicine or surgery, or academicians who are not professors of the faculty, and who are selected in a manner presently to be mentioned, in the Royal Academy of Medicine, in the Academy of Sciences, or among the physicians and surgeons of the hospitals.

Article 2d. The judges selected from among the professors, are, 1st, for the chairs of natural philosophy, chemistry, medical natural history, pharmacy, and materia medica; the professors attached to these chairs, and in addition to them the professors of anatomy, physiology, hygiene, and legal medicine.

2d. For the chairs of surgical clinic and surgical pathology, operations, obstetrics, of obstetric clinic, and of anatomy; the professors attached to these chairs, less one of surgical clinic, who will be excluded by lot.

3d. For the chairs of medical clinic and medical pathology; the professors attached to those chairs, and in addition, the professors of physiology, *materia medica*, and hygiene.

4th. For the chairs of physiology, hygiene, and legal medicine; the professors occupying those chairs, and the professors of anatomy, natural philosophy, chemistry, obstetrics, one of the six professors of surgical clinic and pathology drawn by lot, and one of the six professors of clinical medicine and medical pathology, also chosen in the same way.

If by rejection, (*récusation*), or any other cause, one or several professors of the four preceding series are prevented from performing duty, substitutes will be provided from among the professors of the three other series.

Article 3d. The judges selected out of the faculty are as follows:—

For chairs of anatomy, physiology, medical and surgical clinics and pathology, obstetrical clinic, surgical operations, obstetrics, hygiene, *materia medica*, legal medicine, and pharmacy, four doctors in medicine or surgery, chosen by the academy of medicine in the corresponding section or sections of that body. Two of them must be selected from among the physicians and surgeons of the hospitals.

2d. For the chairs of natural philosophy, chemistry, medical natural history; four members of the Academy of Sciences chosen by that body, to wit, for the chairs of natural philosophy and chemistry in the two sections of natural philosophy and chemistry; for the chair of natural history in the three sections of natural history.

Article 4th. To these twelve titular judges will be added three supplementary ones, (*suppléans*), two of whom will be selected from among the members of the faculty, and drawn by lot, and one chosen by the Royal Academy of Medicine.

These supplementary judges will attend at all the sittings of the concours, and will supply the place, the two first of the professors of the faculty, and the third the place of the judges not attached to that body, whenever these may be obliged to absent themselves during the continuance of the concours. Under no other circumstances are they allowed to take part in the deliberations of the jury.

Article 5th. The titular and supplementary judges elect by ballot the president and secretary of the jury.

SECTION II.—*Of the Conditions required of Candidates.*

Article 6th. In order to be entitled to present himself as a candidate to a chair in the faculty of medicine of Paris, every individual must be, 1st, a Frenchman by birth or by letters of naturalization; 2d, full twenty-five years of age at the moment of the inscription; 3d, and either a doctor in medicine or a doctor in surgery.

SECTION III.—*Of the Trials of the Concours.*

Article 7th. The concours is composed of four kinds of exercises or trials:—

1st. The appreciation of the anterior claims of each candidate, made at an assembly of the judges, and at which the merit of his writings and services is fully discussed.

2d. A printed dissertation handed in to the jury twenty days before the opening of the concours, and the subject of which consists in general views on the disputed chair, and on the plan and method that should be adopted in teaching the particular branch.

3d. A written answer to a question drawn by lot, and which is the same for all the candidates, made in a close room, (a huis clos,) and during a space of time which is the same for all. The candidates afterwards come in rotation, and read their compositions at an assembly of the jury.

4th. A lecture delivered after a day's preparation, on some subject connected with the object of the chair—each candidate drawing by lot the subject on which he is to lecture.

5th. A lecture delivered after three hours preparation, on a subject drawn by lot, and which is the same for all the candidates who can go through that trial on the same day.

Article 8th. The candidates for the chairs of clinic are exempted from these last mentioned trials, to which is substituted two clinical lectures delivered in the lecture room of one of the clinical hospitals of the faculty, after the visit of some patients selected by the jury.

Article 9th. The lectures are an hour in duration—they must be oral, and the candidates cannot make use of any other than simple notes.

SECTION IV.—*Of the Judgment of the Concours.*

Article 10th. Immediately after the last sitting of the concours, the judges assemble and elect by secret ballot, and by a majority of the whole, the successful candidate. Nine constitute a quorum. In case of equal division, the president has the casting vote. The judgment is immediately announced to the public.

Article 11th. The mode of balloting is the same as for the election of members of the academy of sciences.

Article 12th. The candidate elected at the concours receives the investiture of the office from the grand master of the university.

Each of the professors received, and we believe continues to receive, a fixed salary of three thousand francs, besides ten francs for every examination at which he is present. The president at the last examination, (thesis,) receives fifteen francs. Every professor who is designated to be present at any act of the faculty, and absents himself without leave of the dean, is fined. If he absents himself without leave, and does not perform his duties at the school, he loses his salary during the whole time of his absence. Professors who in their lectures, discourses, or in their social intercourse, disregard the respect due to religion, morality, or government, or in any scandalous way compromises his reputation or the honour of the faculty, is referred by the dean to the academic council, and the latter, according to the extent of the offence, pronounces either his suspension from duty, or his final expulsion. The punishments to which the professors are amenable, are, 1st, arrests; 2d, reprimand in presence

of the academic council; 3d, censure in presence of the council of the university; 4th, transfer to an inferior office; 5th, suspension from their functions for a fixed period, with or without a total or partial privation of their emoluments; 6th, leave of retirement before the time of *emeritus*, with emoluments lower than the pension allowed under the latter circumstance; 7th, erasure from the list of members of the university. This is a most severe punishment, as it prevents the individual subjected to it from ever filling an office in any of the public departments.

Two weeks before the commencement of the scholastic year, each professor submits for the examination of the faculty the programme of his course. Each of the courses must be completed before the termination of the year, the faculty determining, before the commencement of the lectures, the duration of each course. The general programme is then published and posted up.

The dean of the faculty is chosen every five years by the grand master of the university from among the professors. His functions are revocable. He is the chief of the faculty; and is charged with the administration and police of that body. He superintends the expenditures; calls and presides over the meetings of the faculty; appoints all the committees; orders when necessary the suspension of a course; and has the casting vote in case of a division of sentiment respecting nominations, presentations, &c. Independently of his emoluments as professor, the dean receives a salary of three thousand francs per annum. The faculty appoints every year two of its members to aid him in fulfilling his functions, to supply his place in case of absence, &c.

To this account of the members of the faculty, it remains to add, that when on duty the professors were obliged to wear peculiar costumes. Those costumes were two in number, the one richer than the other. The first of these was only worn on grand occasions, and consisted in the following articles: 1st, a black, French fashioned coat; 2d, a crimson satin robe with black silk facings; 3d, a cambric cravat with long ends falling in front of the chest; 4th, crimson silk cap ornamented with a gold band; the dean's cap had two; 5th, crimson silk breeches trimmed with ermine. The second, or little costume, was worn only at the private meetings of the school. It differed from the other only in the robe, which is made of black *étamine*, with crimson silk facings; the rest of the dress was the same. When the members of the faculty assembled together to transact business, they had at their orders a beadle, dressed with a black coat and a cloak of same colour, and carrying a silver mace. In their lectures, how-

ever, the professors did not adhere very strictly to the regulations respecting their costume; for they often appeared before the class in a common black suit, without robe or cap, and we never perceived that any of them wore crimson breeches.

We are now met with a question on which the ingenuity of writers on medical institutions has been exercised, and on which we believe opinions are diversified. Whether the plan of allowing regular salaries to the professors of medical faculties is a good or a bad one? Without enlarging much on this subject, we must be permitted to remark, that so far as we are prepared to decide, we believe that the plan pursued in France, is better than is generally admitted. Some we are aware will say, that if a professor receives a regular pecuniary remuneration for his services, he soon loses all the emulation and activity he displayed in the beginning; while on the contrary, a man who knows that his emoluments depend on the number of his pupils, strives to render his course better and more attractive every year. All this is, to a certain extent, very true; but it would be easy to point out instances in America where the very reverse of these results occur—where regularly paid teachers, (in other departments of knowledge,) perform their duty with praiseworthy zeal and talent, and where, on the other hand, teachers whose emoluments are derived from students attending their lectures, have from a knowledge that the purchase of their tickets is essential for graduation, or from other causes, become negligent in the extreme, and have finally performed their duty in a manner little creditable to themselves or profitable to their class.

The system of regular salaries ensures the power on the part of the administration, to enforce on the professors the performance of their duty and the observance of the rules of the school, a point on which much difficulty will often be experienced when the other system is adopted. Besides, in France the emoluments of the professors are not limited to a fixed salary, which we are willing to admit would be attended with some inconvenience. They have, as we have seen, an *eventual* pay, as it is called there, arising from graduation and examination fees, &c. The result of this is, that the teachers are as much interested in making their lectures attractive and instructive as those of our own schools, while the regular salaries they receive, place them as effectually under the *surveillance* and direction of the administration as if they had no other sources of emolument. Were this *surveillance*, and this subjection of the faculty productive of no other result than that of preventing *aggrégés* and professors from countenancing quackery, it would show the advantage that may accrue from it.

But other advantages of the plan of regular salaries can be pointed out. It ensures in small schools a sufficient compensation to the professors, without which they cannot be expected to devote that time and attention to their lectures which is absolutely necessary for success; and in large schools it ensures the latter a source of profit which may be applied to the improvement of the building, to the establishment of clinical wards, and in various other ways. If we examine what happens in our country, we shall find that in the small schools, the professors are obliged, in order to live, to go through all the drudgery of the profession, and have often no time to read and prepare their lectures; and 2d, that few men of talents will leave their practice in one city to join a school in another part of the country. We find that in large schools, on the contrary, the professors receive emoluments comparatively disproportionate to the services they render, and naturally enough oppose the introduction of any modification, which though likely to benefit considerably the cause of instruction, would curtail them of some portion of their receipts. In such cases the schools themselves are deprived of a source of revenue that might be applied more usefully than in enriching a few individuals, who often finally lose the zeal they might have at first displayed. In our opinion, the most effectual stimulus to emulation, among professors, wherever a system of remuneration similar to ours prevails, will be found in the existence of rival institutions, in different sections of the country. Where this incitement to exertion does not exist, on the contrary, apathy will soon succeed to zeal in the professors, and efforts at excellence will seldom be made by them.

While entertaining these views on the subject, however, we willingly admit, that in our country, so long as the present laws respecting the practice of medicine continue in force, the plan of having professors paid by schools, would, instead of proving beneficial, be attended with bad effect, especially if the lectures were gratuitous; because young men who at present cannot afford to study medicine at all, would be enabled to do so for a few months, free of expense, and would then practice without license, and with only a smattering of knowledge. Be this as it may, however, it is certain that the plan adopted in France, in relation to the mode of selecting professors, is better than the one pursued in Great Britain and America, and we terminate this article with the expression of the hope that some beneficial changes may take place before long on that point, in the medical colleges of both countries. R. L. R.

REVIEWS.

ART. IX. *Precis d'Anatomie Pathologique.* Par G. ANDRAL, Professeur, &c.

A Treatise on Pathological Anatomy. By G. ANDRAL, Professor to the Faculty of Medicine of Paris, &c. Translated from the French by RICHARD TOWNSEND, A. B., M. D. &c. and WILLIAM WEST, A. M., M. D. &c. Two volumes, 8vo. pp. 698 and 808. Dublin, 1829.

THE history of sound, scientific pathological anatomy, that pathological anatomy which has created a distinct era in our profession and is destined to form the ground-work of modern medicine, freed from loose conjecture and ingenious hypothesis, hardly dates beyond the labours of the present French school of contemporary writers. The *Chronic Phlegmasiæ* of BROUSSAIS, we consider as the efficient pioneer in subverting that vicious mode of considering and investigating disease which had been so long consecrated by time and authority. That work has not only brought us intimately acquainted with an obscure and important class of diseases which had been in a great measure overlooked or mistaken, but what is even of more importance, it also furnishes us with the first well-digested example of philosophical induction applied to the investigation of disease, by strictly connecting the morbid alterations of structure found after death with the various symptoms the disease exhibited in its progress, from its commencement to its termination, and at the same time duly estimating the agency of the different causes, as well external as internal, that may have been instrumental in the production or modification of the pathological condition. The *Chronic Phlegmasiæ*, it is true, was preceded a short time by PROST's *Médecine éclairée, par l'observation et l'ouverture des corps*, which appeared in 1804, and CORVISART's *Essay on the heart*, published in 1806. Yet these works, although admirable specimens of sound pathological research, as are also BAYLE's *Researches on Phthisis*, which appeared in 1810, only two years after the *Chronic Phlegmasiæ*, seem to have exerted no material influence in leading physicians to the study of morbid anatomy in the spirit that has since distinguished the modern French school.

With more justice perhaps we might go one step further back. To BICHAT, in strictness, belongs the merit of having laid the foundation

of this improved method of investigating disease. Even Broussais acknowledges that his system of doctrines is the legitimate offspring of the *Anatomie Générale*, nor have others denied their many obligations to its immortal author. It was not however permitted to Bichat to follow out to any extent his own principles in their application to pathology; for his *Pathological Anatomy* cannot be viewed other than as an earnest of what might have been expected, had not death arrested him in early manhood amidst his brilliant career.

If we go further back we shall find little to compare with the science of the present day. BONETUS, towards the close of the seventeenth century, (1679,) undertook the laborious task of collecting the innumerable observations of pathological facts that had been made since the revival of letters, which may be considered the birth-time of the science, and of presenting them in a systematic form as a summary of what was then known on the subject. Although his work exhibits great and glaring faults, incident to the imperfect cultivation of the science in those early times, and a mass of confused and contradictory doctrines that were then prevalent, it every where evidences extensive erudition and an enlightened observation, and is not wholly worthless even at the present period when sounder views prevail.

MORGAGNI's great work, (*De sedibus et causis morborum per anatonem indagatis*, 1766-7,) however he may have severely criticised the labours of his illustrious predecessor, is not altogether free from the same faults, and exhibits besides a prolixity that would be quite insufferable, were it not for a certain quaintness of manner that keeps the attention awakened by its novelty. Still it possesses higher claims to distinction than the *Sepulchretum*: it connects the organic lesions with the attendant symptoms more clearly than had been done before his time, and sometimes traces them to their respective causes with a perspicuity and a cogency of reasoning that even at this day calls for our admiration. The work was undoubtedly at the time of its appearance, and for many years after, a valuable acquisition to the profession, as a vast repository of authentic facts—a sort of anchoring place, where the mind could rest upon something positive and demonstrative as far as it went, if not always entirely satisfactory, aside from the thousand ingenious speculations and idle theories that for the most part engrossed the attention of physicians.

The *Historia Anatomico-medica* of LIEUTAUD, (1776-81,) is the next work of importance after that of the learned Italian, but in every respect inferior to it. Its arrangements are extremely loose and imperfect, the cases curtailed and often without definite objects and the

whole forming a medley that will not often be consulted at the present time.

Dr. BAILLÉ's work, considering the time at which it appeared, toward the close of the eighteenth century, is exceedingly defective. It exhibits little of the laborious research of Morgagni, or the sagacity of his great relative, HUNTER, and none of that spirit which characterizes the productions of the present day. It is concise in its delineations, and, if we may be allowed the expression, its sketches of the morbid alterations as revealed after death, hold no very intimate relations with the symptoms exhibited during the course of the disease, and the whole resembles rather a *catalogue-raisonnée*, or a science of pure curiosity, than an investigation into the character and causes of disease.

Many authors succeeded these great men, who pursued their pathological researches in the path traced out by Morgagni, but none of them have left works that claim particular mention in this cursory survey. If such are the imperfections of the works that were universally esteemed the great classics in pathological anatomy before the appearance of the *Chronic Phlegmasiæ* in 1808, how very far below that admirable work and its numerous successors must we place them, in comparing their desultory and heterogeneous mass of ill-arranged facts, with the concision, minuteness, accuracy of detail, and systematic form that the science has attained within a few years in France. It would lead us too far from the object we have now in view to notice even succinctly the most remarkable of these works. Together they constitute a body of fact and doctrine that is rapidly giving to the healing art the stability of a science, and to the practitioner surer and more palpable principles of conduct at the bed-side of sickness. Whoever therefore shall wish to make himself acquainted with a pathology based on correct notions of healthy and morbid structure, and of the vital phenomena of the economy, must apply himself to the study of the works of such men as BROUSSAIS, LOUIS, LAENNEC, GENDRIN, ANDRAL, and CRUVEILHIER. Before passing on, we will merely mention, for we cannot afford the space to enter fully into the subject on the present occasion, that the French pathologists are divided into two sects. The one, at the head of which stands Broussais, profess to be the legitimate interpreters of Bichat's views, by connecting the morbid alterations with the vital laws of the economy, and studying to appreciate the influence of causes in their production and development. Their researches, directed in this spirit, have given birth to a system of doctrines now well known as the physiological medicine. The other sect, numbering among its ardent

supporters, BAYLE, LAENNEC, DUPUYTREN, CRUVEILHIER, and BRESCHET, study morbid structure apart from the vital actions of the system, and endeavour to found a system of medicine on the different organic lesions appreciable in the body after death. In commending so highly the labours of the French school, we would not however wish to be considered as inferring that other countries have remained all this time idle spectators of their progress. We know it to be otherwise. Of modern German and Italian science, we know too little to be able to speak with much precision; but in Britain of late something has been done, and is still doing, in aid of this improved condition of the science; and in comparing the present state of pathology with what it was but a few years back, we must not forget to appreciate, as having contributed to bring about the present state of things, the labours of ABERCROMBIE, HODGSON, FARRE, ARMSTRONG, BRIGHT, and a few others. *Rari nantes in gurgite vasto*.

Of the many works on pathological anatomy in France within the period designated, not one of them has excited a higher interest or been more frequently quoted with approbation than the *Clinique Médicale* of Andral. It soon placed its author in the first rank of pathologists, and at the head of the anatomico-pathological school of France. Our own opinion of its merits and defects were succinctly given in the last number of the Journal, in remarking on the translation of Broussais' *Chronic Phlegmasis*, and we need not advert to the subject again in this place. How far his second performance, which it is our business at this time to introduce to our readers, will maintain the same permanent reputation, may perhaps be matter of doubt. The almost daily accession of researches on morbid anatomy, and the advancing triumphs of a science he has himself so efficiently contributed to bring to its present state, will not allow a summary of pathological anatomy, even by Andral, long to keep its ground undisputed; though in our opinion it is the ablest systematic treatise on the subject that has yet appeared. It is more comprehensive than either Gendrin's or Cruveilhier's work, and is based on more modern data than CRAIGIE'S *Treatise*, the only works we are acquainted with that can be placed in competition with it. For LOBSTEIN'S *Treatise* is not sufficiently advanced to enable us to form a decided judgment of its merits, and RIBES, (see his *Anatomie Pathologique appliqué aux Maladies*,) is too deeply involved in the mysticisms of the doctrines of BARTHEZ and the Montpellier school, to permit him to write with profit for the present age. With MECKEL'S work we are unacquainted, but we suspect it does not sustain so high a rank in Europe as his other productions. We may therefore fairly look up to Andral's

treatise as likely to become the text-book of physicians in this department of science for some time to come; with what advantage, our readers may perhaps form some idea from the analysis we shall endeavour to give of its prominent doctrines and general principles.

The work is divided into two parts sufficiently distinct. The first treats of *general pathological anatomy*; in which the principles that apply to lesions in general, their external form, intimate structure, and mode of production, are considered. In the second, these principles are applied to each of the organs of the system respectively, and the different derangements of each are investigated, which constitute the department of *special pathological anatomy*.

Andral banishes almost entirely from his work the term inflammation, as an antiquated expression, only calculated to render the language of the science vague and confused. He views the term as describing a complex morbid state, which he divides into its elements, treats of each of them separately, and endeavours to appreciate their presence and influence in the different lesions that occur in the system.

The elements of all morbid alterations are comprehended under five heads; lesions of circulation, of nutrition, secretions, of the blood, and of innervation. This system of pathological alterations is founded on the following data. The three phenomena of circulation, nutrition, and secretion, are considered to constitute the fundamental principles of organization common to vegetables and the lower order of animals; but in man, and the higher order of animals possessing a nervous system, a fourth phenomenon is superadded, which exercises a powerful influence and controul over the others, denominated innervation. Finally, since all the materials of nutrition and secretion are derived from the blood, the qualities of this fluid must exercise a very material influence over the functions of nutrition and secretion, and the well-being of every part of the economy requires the proper constitution of this circulatory mass. The pathological classification rests on these principles, and are succinctly stated in the subjoined extract.

“The human body, considered in the state of disease, presents only various modifications of those actions which have already been enumerated as essential to man in health. Thus,

“1. The supply of blood usually received by an organ in the healthy state of the system may be altered in its quantity; from such alterations arise the *lesions of the circulation*.

“2. The component particles of the different solids are liable to various alterations in their arrangement, their number, their consistence, and their nature; hence arise the *lesions of nutrition*.

"3. The different secretions which are separated from the blood in the parenchymatous structure of the organs, or on their surface, may be altered either in their quantity, or in their quality; and hence the *lesions of secretion*.

"Moreover, inasmuch as the state of the nervous system, and the composition of the blood, exert a powerful influence over the capillary circulation, nutrition, and secretion, in the healthy state, it is evident, that as they continue to exert the same influence in disease, many of the derangements of these actions must proceed from various alterations of innervation and sanguification.

"In conformity with these views, I propose dividing into five sections the various morbid alterations to which the human body is liable.

SECTION I.		{ Increase of quantity of blood.	
Lesions of Circulation.		{ Diminution of quantity of blood.	
		{ Alterations of the arrangement of the elementary particles.	{ Malformations.
SECTION II. Lesions of Nutrition.		{ — of their number.	{ Increase. { Hypertrophy.
			{ Diminution. { Atrophy.
		{ — of their consistence.	{ Softening. { Ulceration.
			{ Induration.
		{ — of their nature.	{ Transformation.
SECTION III. Lesions of Secretion.		{ Alteration in the quantity of the secretions.	{ Increased quantity. { Effusion.
			{ Diminished quantity. { Flux.
		{ — in their situation - - -	{ Development in an unusual situation. { In substance.
			{ Translation to an unusual situation. { In elements.
		{ — in their qualities - - -	{ The natural secretion modified in its composition.
			{ A new secretion.
SECTION IV. Lesions of the Blood.		{ Alterations in the Physical properties of the Blood.	
		{ — of its Chemical properties	
		{ — of its Physiological properties	
		{ Primitive.	
		{ Consecutive.	
SECTION V.		{ Primitive.	
Lesions of Innervation.		{ Consecutive.	

Lesions of the Circulation.—These lesions are divided into two principal classes. In the first, *hyperæmia*, the quantity of blood in the capillary system is preternaturally increased. In the second, *anæmia*, it is diminished in quantity.

Hyperæmia is subdivided into four species:—1. Active or sthenic. 2. Passive or asthenic. 3. Mechanical, from venous obstruction. 4. Cadaveric, from physical laws, after vitality is extinguished.

1. *Active Hyperæmia.*—Some local congestions are perfectly compatible with a healthy state of the system, as those arising from moral emotions and violent exercise. Others again, though not amounting to disease, as redness from heat, or a slight irritation, cannot be considered as healthy phenomena. These conditions pass by insensible gradations into a pathological state, and in like manner also into inflammation. In order for these congestions to take place it is not necessary that there should be an undue quantity of blood in the system, for they frequently occur in debilitated individuals, whose blood is neither abundant in quantity, nor rich in quality. When a hyperæmia occurs in one organ, there is a strong tendency to form secondary congestions in other organs closely connected with the affected part; while, in other instances, by a law of compensation, other organs are deprived of their healthy proportion. It is the characteristic of some diseases to produce uniformly a simultaneous congestion in two or more organs, as the measles, scarlatina, and typhus, and pestilential fevers arising from the introduction of a deleterious principle into the circulation. Not only so: the hyperæmia may exist in every organ of the body at the same time, from the general capillary system being overloaded with blood, and the whole system in a state of plethora. Under the influence of this general state, serous effusions, unaccompanied with inflammation, take place into the cellular tissue and into the different serous cavities. These effusions seem to arise simply from the mechanical effects of the over-distention of the vessels, and are the active dropsies of authors which require the use of bleeding and other evacuants for their removal. Also this general hyperæmia, from the excessive supply of blood, and the general excitation induced, sometimes produces, through the associating medium of the sympathies, a general inordinate reaction; in consequence of which the phenomena of fever are fully developed, constituting, in its moderate grade, the simple continued fever of authors. But when the intensity of the reaction of the different organs is great, it gives rise to alarming nervous symptoms, adynamia, &c. And, finally, it is converted from a general into a local affection, when the reaction centres itself on some one organ. Occasionally these congestions, especially in tissues that have undergone some morbid alteration of structure, assume an intermitting type, and in this way organic lesions, that would otherwise escape detection, are revealed. The only appreciable modification that simple hyperæmia exhibits is change of colour. This alteration is often produced by an increased quantity of blood circulating in the part, but on other occasions proceeds from the gradual accumulation of this fluid, which

is retarded in its course, and eventually becomes perfectly stagnant. The experiments of BROUSSAIS, WILSON PHILIP, HASTINGS, and GENDRIN, show that there are several degrees of hyperæmia. In the first, the vessels are contracted, and the circulation accelerated; in the second, the vessels dilate, the blood circulates more slowly, its particles tend to coalesce, and seem disposed to coagulate; and, finally, in the third, the blood becomes perfectly stagnant, the part assumes a deeper brown, and at last becomes quite black.

It does not seem to us that the causes of hyperæmia, its mode of action, and influence in producing disease, are examined very satisfactorily or ably. Indeed, in investigations of this nature the author falls very far short of that rigid scrutiny and comprehensive survey of details which characterize the physiological physicians.

2. *Asthenic Hyperæmia*.—This is the result of diminished tone of the capillary vessels which no longer possess the requisite force to propel forward the blood as fast as it is received, and is often consecutive to the active form on the subsidence of the original irritation leaving the vessels permanently dilated. It is essentially different from inflammation: indeed, *passive inflammation* is a manifest contradiction of terms, and can have no existence. The violet blotches that frequently occur on the legs and feet of old persons is of this kind, and it is frequently the cause of gangrena senilis in such persons, by the arrest of the blood in the capillaries of the feet allowing it to coagulate and obstruct the circulation. It takes place also in scurvy, in the last stage of malignant fevers, convalescence from pulmonary disease, &c.

3. *Mechanical Hyperæmia*.—This term comprehends the sanguineous congestions formed during life by an impediment to the free course of the venous circulation, which a mechanical obstacle presents to the return of the blood from the capillaries. The alterations induced are, 1, change of colour; 2, morbid exhalations; 3, modifications of size and consistence of the parts affected.

“The alteration of colour which accompanies every mechanical hyperæmia, results exclusively from the accumulation of blood in the capillary vessels, and may be either bright red, violet, or brown, more or less deep in shade. In the first stage of this affection, the congestion is confined to the veins of considerable calibre; the transparency of the tissues is not affected, nor is their natural whiteness altered, except where those veins apparently varicose are distributed. In a second stage, veins of a less calibre become congested, and if the tissue affected be membranous, several minute vessels are observed ramifying in an arborescent form on its surface; if the seat of the hyperæmia be a parenchymatous organ, an unusual quantity of blood issues from the part when pressed or simply divided. Thus, in such a case, the brain, when sliced, presents nu-

merous red points; which are nothing else than the divided orifices of the congested vessels; while a section of the liver presents an uniform red appearance, &c. Lastly, in several parts of the cellular tissue, which is interposed between the different organs or parts of the same organ, a number of minute vessels filled with blood are seen ramifying in every direction; in such cases, the cellular sheath of the arteries is sometimes beautifully injected, and the vasa vasorum admirably displayed. In a third degree, the most minute vessels become injected, and are so distended that they appear literally to touch and crowd each other; the tissue thus mechanically congested presents an uniform red, brown, or even black colour.

“When the mechanical hyperæmia is carried to a certain extent, other phenomena may arise as its consequence. Thus, the serous portion of the blood, or even pure blood, may escape from the over-distended vessels, just as water or any other liquid transudes through the permeable sides of a vessel in which it suffers compression. To this source are to be referred several hæmorrhages and dropsies produced by simple transudation in a tissue mechanically congested; and although these effusions have really nothing active in their nature, yet are they considerably diminished, and sometimes altogether removed, by blood-letting, which in such cases acts in a manner purely mechanical, by removing from the vessels the fluids by which their parietes were kept in a state of over-distention. These pathological observations are well exemplified in the majority of those cases of hæmoptysis, hæmatemesis, ascites, and other effusions which are connected with organic disease of the heart.”

4. *Cadaveric Hyperæmia.*—The congestions that take place after death, are various in their cause, appearance, and seat, and are liable to be confounded with vital alterations. The empty condition of the large venous vessels will generally distinguish them from such as arise from mechanical obstructions during life. When produced at the moment of death, they arise from the contractility of the tissue of the small arteries acting after the cessation of the heart's action; but when they take place some time after, they may be caused by dependant position, by transudation of fluids through the parietes of vessels, and by chemical affinities.

All these different species of congestions are liable to give rise to the escape of blood from its vessels, and its effusion either on the surface of the membranes, or into the cellular and parenchymatous texture, even after death. Hæmorrhage may almost be considered one of the natural terminations of active hyperæmia, although we can assign no reason why it should occur in some cases, and in others produce pus, serous effusion, induration, softening, or ulceration; but they are all doubtless connected by one common link, as they occur under apparently the influence of the same causes. BOERHAAVE's experiment of tying the vena portæ, and hæmoptysis from aneurisms of the heart, show the capacity of mechanical obstacles of the circulation to produce hæmorrhages. All hæmorrhages, however,

do not depend on increased vascular action. Some arise exclusively from some modification of the organic disposition of the coats of the vessels allowing the blood to escape, and others again arise from an impoverishment of the blood, as in scurvy, general debility, and the sequelæ of profuse hæmorrhages. Other instances of hæmorrhages from passive congestions have already been noticed.

Anæmia.—This is the reverse of hyperæmia, and the organ affected contains a less quantity of blood than circulates through it in a healthy state. It is more or less complete, and may be local or general. In the local anæmia the calibre of the artery is very commonly less than natural, which may exist either as cause or effect. Sometimes the organ is merely paler than in a state of health; in other cases it is diminished in bulk, its texture softened, and its secretions in some few instances preternaturally abundant. *General anæmia* may supervene without appreciable cause, but most usually it may be traced to the use of food not sufficiently nutritive, and the habitual respiration of a moist impure air in places excluded from the free admission of the sun's rays, or to some organic lesion which affects the process of hæmatosis. It sometimes succeeds to profuse hæmorrhages, or indeed may proceed from any cause which diminishes the general mass of blood, or hinders its due supply. Its most ordinary form is the chlorosis of young females, where it seems to arise from a deficient hæmatosis.

Lesions of Nutrition.—The function of nutrition is liable to various modifications; 1, in the arrangement and distribution of the elementary molecules in the several tissues, constituting monstrosities; 2, in the number of the molecules, constituting hypertrophies or atrophies; 3, in their consistence, constituting indurations or softenings; 4, in their nature and properties, constituting transformations of one tissue into another.

Monstrosities.—These are congenital aberrations of nutrition, which produce a conformation of one or more organs, different from that which naturally belongs to the species or sex of the individual. LITTLE first advanced the idea, that a certain number of these monstrosities, was the result of an arrest or suspension of the progress of the development of the fœtus, and those cases which do not arise from any such suspension, have nevertheless been reduced to certain determinate laws in their aberrations. They may all be referred to two classes, viz. vicious conformations, generally congenital, and alterations of structure, seldom occurring until after birth.

“The development of the fœtus may be modified in various ways; sometimes the formative process, or *nîsus formativus*, as it has been termed, possesses less

energy than natural, and the development of the organs is in consequence suspended, in which case they are found either imperfectly formed, or altogether deficient; sometimes, on the other hand, this force seems to acquire an excess of energy, and then there is a corresponding excess of development, and the organs exceed their natural limits, either in size or number. In other cases again, the development cannot be properly said to be excessive or defective; but the formative purpose appears to have been simply perverted, thus producing various modifications in the direction and situation of the organs. We have examples of this in the general transposition of the viscera, and in certain varieties in the origin of the principal arteries."

"Whatever be the nature and number of these malformations, the implicit obedience to certain laws which nature constantly observes in the midst of these apparent anomalies, is very remarkable. Thus, the situation of the organs has never been so perverted, that the lungs were placed in the skull, or the brain in the pelvis; nor have the organs been observed so confounded together as that the alimentary canal, for instance, made a continuous tube with the aorta, &c.; all of which would no doubt occur, if certain laws did not still preside over this state of apparent disorder and confusion. Another illustration of the existence of these laws is, that man and the higher orders of animals, may present such an arrest in their development, that several of their organs shall represent exactly the natural state of these parts in the inferior animals; whereas the latter can never attain such a degree of development, as that their organs shall resemble the corresponding parts of the higher orders. Thus, for example, the human brain, arrested in its evolution, may present an appearance more or less exactly analogous to the brain of fishes or reptiles, but the simple brain of these animals can never attain the degree of complicated structure which the human brain presents. Several malformations may exist together in the same individual; indeed, such is perhaps the most frequent case, whenever the deformity is at all considerable. Sometimes these various malformations are all of the same class; or in other words, are all produced by the same cause, for instance, by an excess or a deficiency of development. Such vices of conformation constitute the *compound monstrosities* of Meckel; while his class of *complex monstrosities* comprehends all those which result from the existence in the same individual of malformations belonging to different classes.

"The complex monsters, in Meckel's acceptance of the term, are the most common. Several of them result from the law so ingeniously conceived by M. St. Hilaire, which establishes that the exuberance of nutrition in one organ involves to a partial or less extent the total or partial atrophy of some other organ, and *vice versa*. Innumerable applications may be made of this law of compensation, as it is termed, to the study of monstrosities. Thus, in several individuals who have on one hand or foot, supernumerary fingers or toes, the hand or foot of the opposite side has fewer than ordinary."

Monstrous formations from excess or deficiency of development, occur much more frequently in external parts than in internal organs, but irregularity of form much more frequently in those organs which are principally supplied by the great sympathetic, than such

as derive their nerves from the cerebo-spinal system. Female monsters are more frequent than those of the male sex. Of eighty monsters examined by MÆCKEL, sixty were females and only twenty males. This excessive proportion of females may be attributed to the fact, that in the early stage of foetal life there is but one sex, the female, and that the genital organs are most commonly arrested at an early period of their development. The hereditary nature of certain malformations is established by many curious facts, but we regret that our limits will not permit us to go further into this subject which our author treats with learning and ability.

Hypertrophy.—This is an increase of the constituent molecules of a solid, commonly arising from the exuberance of the nutritive powers of a part, and should be restricted to those cases where the tissue retains its natural structure and organization. This affection is to be studied in the several elementary tissues, and in the organs formed by a combination of these tissues. A part hypertrophied acquires a greater degree of firmness and density, with increased bulk; and where the tissue naturally presents a certain degree of density, it often assumes a dull white or grayish colour, with a degree of hardness approaching to cartilage, or a substance resembling the interior of a turnip. It is this kind of alteration of the cellular tissue, when it occurs in laminated or rounded masses, which has been denominated *scirrhus*, and in other cases *encephaloid*, from some rude resemblance to cerebral substance. The serous membranes, which are a peculiar form of cellular tissue, have never been found to exhibit this exuberance of nutrition, though its subjacent tissue frequently has. The tegumentary tissues, both mucous and cutaneous, are on the contrary often affected. In a case of this sort the cutaneous covering exhibited distinctly a regular order; 1, the corium; 2, the papillæ; 3, the internal white layer; 4, the rete mucosum; 5, the horny layer; 6, the epidermis of which the skin is naturally composed. Little is known of the tendency of cartilage to become hypertrophied, but the fibrous, osseous, nervous, and muscular systems frequently present this alteration. The minute vessels that convey the blood through the various tissues, occasionally acquire an unusual development, and present the appearance of vegetations clustered together, not unlike polypi, in others resembling the spleen in texture with its areolæ gorged with blood, and in others again forming an accidental erectile tissue. The size of an organ is not invariably increased in this affection, for while one of its tissues only is hypertrophied, the others may fall into a state of atrophy, and thus even cause a diminution in the bulk of an organ. Irritation or excessive nutrition is not the sole

cause of this disease; the assimilating powers may remain in their natural condition, and the powers of disassimilation be decreased, and produce the same effect. The existence of such a cause accounts for the good effects sometimes obtained from the use of stimulants, as iodine and mercury, in their treatment. A third kind may depend upon an alteration of the function of nutrition generally, as seems to be the case in scrofula.

Atrophy.—This state is produced, 1, by diminished supply of blood; 2, by diminished nervous influence; 3, by the suspension of the function of the part; 4, by imperfect sanguification; and 5, by irritation. This last cause operates indirectly from the law of compensation, some other tissue or organ labouring under increased activity of nutrition. While in hypertrophy the part commonly receives an increased supply of blood, in this affection it is diminished. So also are its characters the reverse of the former; the volume of the part is lessened, if a membrane, thinned, its texture generally softer and paler than natural, and it is not unusual to have an undue quantity of fatty matter deposited around it.

Ulceration.—This is a solution of continuity in a tissue produced by absorption of its molecules. It is preceded, 1, by a state of hyperæmia, most commonly sthenic; 2, by different alterations of nutrition, as chronic indurations of cellular tissue ending in ulceration, and then usually termed *cancer*; 3, by morbid secretions, which, by a law of the economy to accomplish their evacuation, thus open a way to the exterior; 4, by gangrene, which calls for a separation of the dead from the living part. The ulcerative process depends on certain special conditions, which reside neither in the intensity nor the duration of the irritation, and in many cases is not the result of a local affection, but rather an indication of a general morbid condition, as in scorbutic and scrofulous affections.

Induration consists in an increase of the natural consistence of the tissues, without other alteration of their texture. It may result from an alteration in the nutrition of the solid particles, both as a physiological change in the progress of age, and as a morbid production at any period of life; and finally, it may depend exclusively on a modification of the fluids. Pulmonary hepatization is an instance of the latter species, although its morbid texture is preternaturally friable. The induration of the cellular tissue, (skin bound,) of new-born infants, is an instance of the same kind, which doubtless arises from an alteration of the qualities of the fluids exhaled into the cells of the tissue. Perhaps, indeed, the production of scirrhus may be owing to the same kind of effusion of concrete albuminous matter into the

areolæ of the cellular tissue. Often the induration is caused by the conjoint alteration of the solids and the fluids, as around old ulcers. Parts indurated, present very different appearances in form, size, and colour. Sometimes they are pale; in others red, gray, brown, or black. Sometimes their volume is increased, in others diminished, especially when they depend on a condensation of the fluids. Irritation is one of the most constant elements in the production of this affection; but in some instances there is no proof of its existence, and moreover is not of itself sufficient to account for its production.

Softening.—This is a diminution of cohesion of the different elementary tissues, and there is scarcely an organ in the body which has not been shown to be subject to it. Sometimes it affects only one tissue of an organ, as the cellular tissue, that connects together other textures; one of the layers of the mucous or cellular membrane, &c. and in other cases it affects indiscriminately the whole texture of an organ as well as the fluids it contains. It may exist in different degrees, either leaving the solid texture of its natural consistence, but more easily torn or broken down, or the whole reduced to a pulpy mass; or finally, the original structure so altered as to present no appearance of organization. These alterations exhibit very different characters, both as it respects colour and bulk. Sometimes the parts retain their colour, in other instances they are pale and blanched, milky, white, gray, and red; and their bulk increased, diminished, or natural. While induration is almost invariably a chronic form of disease, this affection may be either acute or chronic. This alteration doubtless depends on a modification of nutrition, but what its uniform proximate cause may be, is not ascertained, for, although active hyperæmia is the most constant and striking phenomenon which precedes it, we cannot consider it to be the sole efficient cause, as it is not invariably present; and besides, in some instances, the existence of an irritation or of inflammatory action is wholly incompatible with the condition of the attendant phenomena. Weakened energy of the vital and nervous powers, we are disposed to consider as the efficient cause of all those varieties which occur in sickly, cachexic infants, whose sum of vitality is actually below the natural standard; also in old decrepid persons, in adults affected with scrofula, rachitis, or scurvy, and in persons of all ages exhausted by chronic diseases, or by food not sufficiently nutritive, as in the animals experimented upon by M. MAGENDIE, where softening of the corneæ was seen to follow protracted abstinence from proper food.

Transformations.—Here the nutrition of a tissue is so modified as to change its nature, and convert it into a totally new form. This

law of transformation of one tissue into another, is one of the most universal facts which organized beings reveal, both in a healthy and morbid state; but all tissues are not equally liable to it, neither does it take place in the same manner in them all. As the cellular tissue was the original matrix of all the others, so they are all susceptible of being reconverted into it. On the other hand, all the tissues except the nervous, and it also where nerve originally existed, may be produced indifferently in the cellular texture, and the nature of the transformation is determined by the nature of the function it is accidentally called upon to fulfil, as cartilage where elasticity is required, and a serous membrane where great friction is called for. Divided tissues are reunited in some instances by the same tissues; in others by different ones, and they are all susceptible of such transformations as take place during the evolution of the foetal state, or in other animals. Thus cartilage may be converted into bone, but never into mucous membrane, and the muscular may be changed into the fibrous, but not into any other. Finally, every tissue, when reduced to a state of atrophy, especially if the function of the part cease, tends to resolve itself into its original cellular tissue. In many cases the first phenomenon which presents itself to our notice, in a part where the transformation is subsequently to take place, is a degree of excitement, attended with more or less sanguineous congestion; in others there is no such indication present, and we are forced to consider the change merely as the result of an aberration of the natural nutrition, without being able to assign its precise cause. The transformation of cellular tissue into serous membrane is a common occurrence, not only from inordinate motion in a part, but also in the parenchymatous substance of organs, in the form of cysts, containing various substances and secretions, which, in some instances, are anterior to the formation of the membrane, as where they contain a coagula of blood, and in others posterior, as where different secretions are contained in multilocular cysts. The transformation of cellular tissue into mucous membrane is rather a rare occurrence. It however constitutes the parietes of old fistulæ of some internal ulcers, without external communication, and sometimes even replaces portions of mucous membrane destroyed. When skin is destroyed, it is regenerated incompletely, being generally composed of corium, and of epidermis only, and a mucous membrane, on being long exposed to the air, takes on an appearance resembling skin. One of the morbid growths which is most evidently formed at the expense of cellular tissue, is fibrous structure, in different states of perfection, from cellulo-fibrous tissue to true ligament, and these productions are not unfrequently in turn con-

verted into cartilaginous and osseous transformations, or end in cancers. Muscles, from long cessation of their function, sometimes also are transformed into mere fibrous structure. Cartilaginous transformations are as common as the fibrous, and occur under almost the same circumstances; in many cases they succeed to them. They are found in cellular tissue, in parenchymatous organs, and loose in serous and synovial cavities. It is exceedingly rare to find any tissue, except the cellular, undergoing a real transformation into cartilage. Thus, although we constantly observe the formation of plates of cartilage, immediately under the serous membranes, there is no instance on record, in which the serous membrane itself has been converted into that substance, and where these plates are found on the surface of the liver, spleen, between the layers of the pericardium, between the dura mater and arachnoid, or between the internal and middle tunics of the arteries, the membranes themselves invariably remain intact. The cellular tissue, subjacent to the mucous membranes, is sometimes, though rarely, transformed into cartilage; and perhaps also these membranes themselves, at any rate Laennec records an instance of it. The osseous tissue may likewise undergo this modification of its nutrition from a deficient supply of its calcareous matter; but there is no well-authenticated account of this transformation occurring in the muscular fibre. The osseous transformation is almost exclusively confined to the cellular, the fibrous, and the cartilaginous. If we trace the formation of the human skeleton from its earliest period of development in the fœtus to extreme old age, we shall find the fibrous, and still more the cartilaginous tissues presenting a constant tendency to ossification. The same parts and structures which we have said are most liable to cartilaginous transformation, will be found subject to the osseous in the same proportion. Certain cartilages and fibrous structures are especially prone to this transformation; it is even through them, as an intermediate form, that it is frequently produced, and fractured cartilages are in general reunited by a hoop of osseous matter, which is formed at the expense of the perichondrium.

Lesions of secretion.—The blood, in circulating through the system, is submitted to three species of elaboration. In the first, denominated nutrition, the molecules are acted upon by the plastic power which presides over the formation of tissue, and are appropriated to form a part of the animal structure. In the second, the albuminous matter, in a state of liquid or vapour, is constantly poured out throughout every part of the system, on all the cutaneous, mucous, and serous surfaces, as well as in every areolæ of the cellular tissue. In the third species, the elaboration takes place in certain

organs, exhibiting various degrees of complication of structure, from that of a simple follicle to that of the liver or kidney. Heretofore we have treated only of the first species of lesions of nutrition, and found them to consist in various alterations in quantity or quality of the molecules which compose the different tissues. It now remains for us to treat of the lesions of the other two, which may be divided into four classes. 1. Secretions morbid in quantity. These constitute when retained, *effusions*, when eliminated, *fluxes*. 2. Natural secretions occurring in parts that are not destined to form them in their healthy state. 3. Secretions morbid in quality, which differ more or less, or altogether in properties from the natural secretions of the part; and 4. Morbid gaseous secretions. The quantity of the secretions in the first class may be either increased or diminished, but we shall omit the consideration of *acrinia* for want of sufficient data to illustrate its causes and effects, merely remarking however that one of the first effects of irritation is to produce this state; and that in dissecting individuals who had presented various nervous symptoms during their disease, the only appreciable lesion of the head discovered was often an uncommon dryness of the cerebral membranes.

Hypercrinia constituting effusion.—Dropsies occur exclusively in the adipose and cellular tissues, and serous membranes. The fluid effused presents almost all the physical properties of the serum of the blood, of the bile, uric acid, extracto-mucous matter, an undue quantity of albumen, &c. The chief causes of dropsies are, 1, irritation of the organ affected; 2, sudden disappearance of another dropsy; 3, suppression of certain secretions; 4, alterations of the blood; 5, venous obstruction; and 6, a cachectic state of the system. The irritation may be seated in the part containing the effusion, or in adjacent tissues, and it (the irritation) may disappear, leaving the effusion, or persist till it, together with the effused fluid, is dissipated by appropriate means. On the sudden disappearance of a dropsy, if no evacuations take place by the excretories, it is apt to produce effusion into some other part, in the same way as the injection of water into the veins without drawing off an equivalent quantity of blood causes untoward symptoms. If the due quantity of the serous fluid of the blood be not eliminated from the cutaneous and pulmonary surfaces, as often happens in cold moist climates, (see EDWARD'S *sur les influences des agents*, &c.) it is liable to be effused into the cellular tissue, serous membranes, or into the renal parenchyma, giving rise to dropsy or diabetes. The dropsy that so often occurs during the desquamation of the cuticle after scarlatina, may be attributed to the same cause. Dropsies may not only arise from a superabundance

of blood in the vascular system, as is shown by the attendant symptoms, but also from the habitual use of a scanty, insufficient diet, which impoverishes the blood and deprives it of its due proportion of fibrine, and again, they may arise from the introduction into the blood of the virus of certain reptiles and other poisons which take from it its property of coagulation and render it preternaturally thin. Venous obstruction is a common cause of dropsy; if it be in the vein of a limb, the œdema will be confined to that limb; if in the vena portæ or its branches, to the cavity of the peritoneum; and finally, if in the heart, the effusion will be general. We have no positive proof that an obstruction to the course of the lymph will produce this disease; probably the free manner in which the lymphatic vessels inosculate one with another, obviates the effect that would otherwise be induced. There are doubtless other causes of dropsy which are not appreciable in the present state of our knowledge. Such cases may arise as primary affections, or complicate various chronic diseases, and might even be supposed to depend on a morbid condition of the blood, but of this there is no positive proof, and the subject requires further investigation before we can come to a definite conclusion. Excessive secretions of fatty matter sometimes occur to the extent of being considered morbid. The disease may be either general or local in the form of tumours called lipoma.

Hypercrinia producing fluxes.—These discharges may come from membranes or from glandular tissues, and are bloody, serous, or merely an excessive secretion of the different fluids furnished by the secretory organs, as mucous, salivary, bilious, urinary, &c. These fluxes may be either acute or chronic, active or passive, continued or intermittent. The organ whence the discharge proceeds may present the following appearances; 1, a natural condition; 2, a remarkable colouring of tissue; 3, a sanguineous congestion, either active, passive, or mechanical; 4, different alterations of texture. Besides these alterations in the parts whence the flux proceeds, there may be, 1, irritation of the membrane on which the secretion is poured; 2, some modification of the nervous influence; 3, suspension of other secretions; 4, absorption of fluid from serous cavities; 5, elimination from the system of some foreign material taken by absorption. The reason why some diseases, as acute rheumatism, pulmonary tubercles in a state of suppuration, &c. are more prone to give rise to profuse fluxes from the skin, while in chronic gastritis this organ is remarkably dry, is not satisfactorily explained. Can it be that in pulmonary disease the cutaneous transpiration is a substitute for the suspended pulmonary transpiration?

Heterocrinia.—Several of the secretions, or their constituent principles, have been found at a distance from the organs which secrete them in a state of health, and eliminated by other organs. Fatty matter, in small globules, have been detected in the blood-vessels; caseum, a constituent of milk, has been detected in the urine, in the cavity of the peritoneum, and even as an ingredient of pus, where the mammary glands could not have formed it; cholesterine, a constituent of bile, has been found in almost every part of the body; uric acid in gouty deposits, and in the sweat and urea in the blood, in the excretions of the skin, mammary glands, &c. It would appear from all the facts of this kind on record, that the elements of all the secretions exist in various proportions in the blood, and that they are separated from it naturally by certain organs only by their peculiar construction; but that under certain circumstances, those elements are separated by other outlets than those through which they naturally pass. It may be conjectured that this metastasis of the secretory action arises from the blood containing an undue proportion of certain elements of secretion, which call for supplementary outlets for its elimination; or secondly, it may be thought that the elements are separated by the proper organs and afterwards reabsorbed into the general circulation; and lastly, it may be attributed to the natural secretory organ being rendered unfit to perform its function, and thus other organs are called into action to afford an outlet to the accumulated retained elements.

Altered Secretions.—The plan of this work requires that the altered secretions of the different organs should be treated in the second part, when these organs shall come successively under consideration, and in this place we shall notice only the morbid productions which are formed in the place of the perspiratory fluid. It is not, however, always easy to distinguish this alteration from that of the nutrition of the part, and, indeed, they are not unfrequently combined. As the perspiratory fluid exists in every part of the body, the morbid secretion which takes its place may also occur in every part: thus it is that tubercle appears indifferently in parts the most distant and most differently organized. These productions of morbid secretions are of various form and appearance, solid or fluid, inorganic, increasing by juxta-position, or organic, growing by intussusception, and endowed with the properties and functions of vital matter. The inorganic products, composed for the most part of albumen and gelatin, are comprised in the following varieties: 1. Pus. 2. Tubercle. 3. Colloid matter. 4. Fatty matter. 5. Saline substances. 6. Colouring matter. The organic products, which are believed to consist

of the fibrinous element of the blood, poured out, coagulated, and concreted into various forms, may either form a part of the living solid, and be influenced by its actions; or be wholly detached from it, and maintain a separate individual existence. Of the first kind are false membranes, scirrhi, the different sarcomata, encephaloid and fungus hæmatodes. The other comprehends all the entozoa. The tissues in which these morbid productions are developed may present a natural healthy state, a state of active hyperæmia, a modification of the consistence of their molecules, a modification of their number, (hypertrophy or atrophy,) or contain a purulent secretion surrounding the accidental production. Different theories are entertained of their causes; some consider them as the result of atony; others refer them to a state of stimulus or irritation in the part; and a third party attribute their formation simply to a perversion of the natural actions of nutrition and secretion. We are of opinion, that whatever tends to modify the natural process of interstitial secretion, tends likewise to create an accidental production. It is only in this way that irritation operates as an exciting cause; not because it *increases* the activity of the nutrition or secretion, but because it *deranges* these organic functions. There are in every individual certain peculiarities of constitution, which lay the foundation of the different temperaments, and which, by imparting a peculiar character to the innervation, hæmatosis, and all the different functions of nutrition and secretion, are the real and essential cause of the morbid productions under consideration. These peculiarities may be independent of the primitive organization, and may have been acquired from the influence of external agents. Thus, living in a cold, damp atmosphere, excluded from the sun's rays, produces such a modification in the general state of the system, that a disposition to the secretion of tubercles is formed in every organ. Thus, likewise, the same atmosphere causes an abundant development of entozoary animals in the alimentary canal, and in other parts of the body. We shall treat of these different productions in the order they have been mentioned.

Pus.—Several varieties of this secretion have been established, founded on physical alteration of properties. 1. Creamy homogeneous pus. 2. Curdy pus. 3. Serous pus. 4. Glairy muciform pus. 5. Concrete or lardaceous pus. These different kinds, so various in appearance, are found, when examined with a microscope, to be composed of globules floating in a serous fluid, which coagulate by heat, acids, or the muriate of ammonia. M. Gendrin considers the globules of pus to be similar to the globules of the blood, only larger, deprived of the colouring matter, and rendered of an opaque yellow

colour; which differences depend on the transformation the globules of the blood undergo in their conversion into pus. He endeavours to prove, by a number of experiments, that pus is nothing more than blood in a peculiar state of alteration, and that the globules of the blood escape from the capillaries in the state of pus, in consequence of some modification they are subjected to during the stagnation which the blood undergoes in certain degrees of active hyperæmia. The remarkable fluidity of pus from scrofulous ulcers he attributes to the excessive quantity of soda, and of the muriate of soda, which such pus contains. Pus has been found to contain a substance resembling the caseum of milk, which, if verified, might afford some explanation of the peculiar tendency of puerperal women to suppuration. Now, that it is well established that it does not require a breach of texture for the formation of pus, the knowledge of chemical re-agents to detect its presence have very much lost their value, and we shall not, therefore, dwell upon them here. Pus has been found in every tissue in the body, in the blood itself, even where no suppurating point could be detected in the system, and also in the lymphatic vessels. Sometimes it exists infiltrated in the texture, in others, collected into an abscess, and often without any peculiar lesion which can be regarded as the cause of the purulent secretion.

Tubercle.—This term is employed to distinguish a yellowish-white body of rounded form, extremely variable in size, first hard and friable, but afterwards transformed into a soft heterogenous matter, composed of whitish, curdy masses suspended in a sero-purulent fluid. When the tuberculous matter is softened and evacuated, it leaves behind it an ulcerous cavity, which sometimes extends in every direction; in others, remains stationary for an indefinite time; and in others again, even cicatrizes. The origin of tubercles are not, as BARON and DŒUVY maintain, necessarily vesicular; neither are they, in the first instance, grayish, semi-transparent granules, as Laennec supposes, or even minute deposits of pus afterwards concreting, as has been thought by Cruveilhier, though this last opinion is not without plausibility, for it is probable, that at the moment of deposition the tubercle is in a fluid state; but for the present we shall take it for granted, that in the first stage, tubercle is an opaque, friable, rounded body, of a yellowish-white colour, without organization. Whenever the secretion of tubercle has commenced, that process continues; each particle of living matter, instead of the perspiratory fluid usually separated from the blood, takes from it a particle of tuberculous matter by which the mass is increased. All tuberculous matter then, is in this manner infiltrated among the tissues of the part. Af-

ter continuing in this crude state for an indefinite time, it is susceptible of transformation into purulent or cretaceous matter. The purulent transformation of tubercle is what has been termed its period of softening. This process consists in the tubercle acting on the tissues with which it is in contact like a foreign body, and causing a purulent secretion, which, mingling mechanically with the tubercle, separates its particles, and reduces its consistence to a clotted, fluid state, in which state it is commonly discharged. Sometimes, however, the tubercle, instead of softening, acquires an unusual hardness, and becomes transformed into a gritty mass. This arises from the reabsorption of the animal matter, leaving behind it the calcareous deposit. As tubercle is produced by the perspiratory secretion, of which it appears to be a morbid alteration, it may be developed in every part of the body, but it is most usually secreted into the cellular tissue. It is, however, not unfrequently found in the lymphatic system, and in the mucous follicles. In adults they occur most frequently in the lungs, and next in frequency in the small intestines. In children they occur more frequently in other organs, without affecting the lungs, than in adults. They are very rare till the age of four and five years, when they produce greater mortality than at any other period. After this period is passed over, they become less frequent till after puberty, when they become very common, especially in the lungs, intestines, and lymphatic system, and continue so till about the age of forty. The predisposing causes of tubercle are still far from being well known. There is an especial tendency to their formation in individuals of very fair skin, with bright red cheeks, strongly contrasted with the blanched appearance of the rest of the countenance, blue eyes, light thin hair, and a soft, slender, muscular system, showing little contractile power; in whom the blood is serous, deficient in fibrin and colouring matter, and the mucous secretions predominate. Such individuals are very liable to sanguineous congestions, succeeded by chronic ulcerations and various disorganizations. They also preserve in adult age many of the characters belonging to childhood, for their organization is in a manner arrested. Such a constitution may likewise be acquired by external causes, as by living in an impure, moist, ill-ventilated atmosphere, excluded from the rays of the sun, and by being fed on unwholesome, scanty food, that does not sufficiently repair the forces of the system, or by excesses, which waste it, and debilitate the nervous energy. In short, the tubercular diathesis is induced by whatever hinders the proper development of the system, and irritation alone will not account for the production of the disease. We must, therefore, for the present,

be content to consider tubercle as the result of a modification or perversion of secretion, often attended or preceded by active sanguineous congestion.

Colloid Matter.—This morbid secretion resembles glue, honey, or jelly, is of various colour without any trace of organization, and appears to be separated from the blood and deposited into the different organic textures. Sometimes it is infiltrated into them; in others collected into a mass, and in one case it was found poured out into the pleuræ without any other investment. The cellular tissue in which it is infiltrated may be indurated, hypertrophied or otherwise altered.

Fatty Matter.—This may be of two kinds, either natural fat or altered in its physical and chemical characters.

Saline Substances.—It often happens that under the influence of causes, which are still far from being well known, various saline substances are formed or deposited in super-abundant quantities in different parts of the body. There is not a single part of the system where such saline concretions have not been discovered.

Colouring Matters.—The formation of colouring matter in the tissues is one of the most general phenomena presented in the organic kingdom. The white variety of the human race is that in which it least abounds, but it not unfrequently occurs as a morbid secretion and exhibits various characters. There are however only two species, the black and the yellow, melanosis and cirronosis which claim consideration.

Melanosis.—This name has been given to an accidental production whose distinguishing character is a black colour more or less intense. It may exist in four forms. 1. In masses, encysted or otherwise. 2. Infiltrated in different tissues like tubercle. 3. Spread out in layers on membranous organs. 4. In the fluid state, either pure, or mixed with other fluids. There is no trace of organization in melanic masses, neither are they often encysted, but they vary very much both in form and size. According to Laennec, who considered them to be organized, after a time they soften like tubercle and are eliminated; but this process has been very rarely observed, and may even be questioned, further than as it occurs in the tissue mixed in and surrounding these masses. Infiltrated melanosis with induration of the tissue is that form of the disease which Bayle has considered as a species of phthisis, but we are inclined to view the induration as the result of chronic inflammation, and the deposition of the black matter into it an adventitious occurrence, not giving any peculiar character to the disease: thus in other instances the induration may be accompanied with all possible colours, red, bright gray, deep gray, or slate colour. Mela-

nosis in layers is most apt to occur on the free surface of the serous membranes; sometimes on their adherent surface, and also upon and under mucous membranes. The fluid form has been found in the stomach, secreted by its mucous membrane; also in the peritoneal cavity in chronic peritonitis; in one case in the urine, and in a fibrous cyst in the kidney of a horse. Chemical analysis has shown that this matter is composed chiefly of highly carbonized matter with albumen, fibrine, and other materials usually found in the blood. There is scarcely a tissue in which this accidental production has not been found, but it is much more common in some parts than in others, as in the lungs and lymphatic system. It has never however been found in the brain, though this organ naturally contains black matter in certain parts. It often tinges scirrhus and encephaloid tissues in the liver, stomach, breasts and testicles; has also been found to exist in minute portions in small arterial and venous vessels, and in one case to flow like ink from a cancer of the breast. Laennec has endeavoured to draw a line of distinction between this matter and the black pulmonary matter so common in old people, but in our opinion without any just foundation. All ages are liable to this formation, but it occurs most frequently in old age, as if the disposition to the formation of tubercles so prevalent in youth were replaced by the disposition of the secretion of melanic matter. Its frequent occurrence seems also to coincide with that period when the pilous system becomes deprived of its colouring matter. The symptoms to which this affection gives rise have nothing peculiar about them. They depend on chronic irritation which often accompanies them; on the simultaneous existence of other accidental productions, or on the uneasiness which these masses may occasion mechanically, by compressing other parts.

Cirronosis.—This affection has been particularly noticed by Eobstein, in the foetal state, and differs only in situation from the *icterus neonatorum* of authors.

Morbid secretions susceptible of organization.—*Organizable matter of the serous surfaces*.—The numerous varieties of form which this substance presents have been long known by the name of *false membranes*. They are composed of conerescible fibrine and an albuminous fluid contained in cells. It has been a question whether their vascularity was derived from the adjacent membrane, or existed independent of it. We are of opinion both theories are correct: for they will be found to contain vessels communicating with the adhering part, and also blood not contained in vessels, and which vessels do not communicate with the surrounding tissues. There are three states through which these substances pass. In the first they exist as coagulable

amorphous masses without trace of organization; in the second they become organized and vascular; and in the third they possess all the properties of cellular tissue or serous membrane, are obnoxious to various morbid derangements, as hyperæmia, the exhalation of blood, secretion of pus, tubercle, &c. and may be transformed into fibrous, cartilaginous or osseous tissue.

Organizable matter of the tegumentary surfaces.—A substance capable of coagulating spontaneously, is sometimes deposited on the free surfaces of the mucous and cutaneous membranes. Sometimes it extends in a membraniform layer, over a portion of mucous membrane in a state of irritation, and in others closely unites the opposite surfaces of membranes accidentally in contact. It has been doubted whether they ever become vascular, but M. GUERSENT has traced vessels in the false membranes of croup, anastomosing with the mucous membrane beneath. They often become detached by the secretion of a fluid, by the mucous membrane under them.

Organizable matter of the vascular system.—Whenever the circulation ceases in a vessel, the internal surface of that vessel tends to become the seat of an exhalation, producing that same organizable matter—of which we have already followed the formation on the serous—mucous—and cutaneous surfaces—and obliterates its cavity.

Organizable matter of accidental surfaces.—When any tissue has suffered a solution of continuity from both surfaces of the wound, it exhales a matter which, like those just examined, becomes solid, organized, and vascular, and is thus converted into a genuine tissue.

Organizable matter deposited in the tissues of various parts of the body.—These productions, infinitely varied in their physical appearance, are all either organized, or have a tendency to become so. Some of them are homogeneous in their texture, resembling coagulated fibrine, or possess the hardness of fibrous or cartilaginous matter, or merely the consistence of cerebral pulp. Others again are of heterogeneous composition and texture, consisting of different component particles, with structures, filamentous, areolar, lobular, or cellular, containing fluid matters. In some cases the organizable morbid production consists of a reddish, flesh-like tumour, traversed by numerous vessels: this is the *vascular sarcoma* of Abernethy. If some contain cells, with exceedingly vascular parietes, and filled with a serous fluid: this is his *cystic sarcoma*. When it presents a granulated appearance, he calls it *pancreatic sarcoma*. When it appears as a grayish or whitish substance, without trace of vessels or of blood, and often divided into regular lobules by something like fibrous in-

tersections, of sufficient hardness to grâte under the knife, it is called *scirrhus*, so that scirrhus may be of two kinds, either a simple alteration of nutrition of the cellular tissue, or a morbid secretion. When the production resembles cerebral pulp, just as it begins to soften, containing either vessels or blood alone, it is called *encephaloid matter*, or *medullary sarcoma*. Different alterations and productions have received the name of *fungoid hæmatodes*. Sometimes it is accidental erectile tissue, in other cases vascular sarcoma, medullary sarcoma, &c. *Cancer*, in the author's opinion, is not a distinct morbid alteration, but the name is applied to every lesion, whether of nutrition or secretion, that has reached the period when it terminates in an ulcer, constantly extending its ravages either in depth or surface.

Entozoa.—This term is applied to animals generated within the body, which possess a separate individual existence. Those introduced from without, are called *ectozoa*. The entozoa have distinct habitations; some of them reside in cavities, others in the parenchyma of organs; the *ascaris lumbricoides* are found only in the intestinal canal, the *strongylus* chiefly in the urinary passages, the *fasciola hepatica* in the liver, the *filaria* in the cellular tissue. They exhibit three principal varieties of form; 1, cylindrical; 2, riband-shape; 3, vesicular. Their organization is very variable; some consist merely of a parenchymatous mass, without distinct cavity, or very perceptible organs, others resemble a bladder filled with water, whilst others again show a more complicated organization, possessing a muscular system, an alimentary canal, organs of generation, and rudiments of a circulatory and nervous system. CUVIER divides them into two classes, the *cavitaria*, which possess a digestive tube, and the *parenchymatosa*, which are destitute of this organ. The former comprise the *filaria*, *ascaris*, *strongylus*, *trichocephalus*, and the *oxyuris*; the latter the *acanthocephala*, *trematoda*, *cestoidea*, and *cystica*. In this place we shall treat only of the cystica, the hydatids of authors. They occur in almost every part of the body, in the parenchyma of organs, in mucous, serous, or vascular cavities, and in the free cellular tissue. One class of them consists of a simple bladder, filled with a clear fluid, without appendix of any sort, denominated *acephalocyst*. The other class, the cephalocyst, may have one or more heads, or a simple retractile appendix, the *cysticercus* of Laennec. They may arise as the other productions we have spoken of, from irritation, which deranges the natural mode of nutrition and secretion, and thus act as an accidental agent. It is remarkable, that the entozoa have a peculiar tendency to be developed and to increase

when the external agents are such as to prevent the complete development of the process of nutrition in the different tissues. As if the organic particles thus prevented from perfect assimilation, proceed to derange themselves so as to produce an inferior being, an entozoon. In fact, they occur most frequently in moist countries, and from the use of poor watery diet. They may be produced almost at will in animals, by keeping them in damp, confined habitations, excluded from the sun. There is, however, one species, the *dracunculus*, which forms an exception to the rest, being exclusively confined to dry and torrid countries.

Gaseous secretions.—The system in the healthy state constantly exhales gases from the cutaneous surface, the alimentary canal, and the lungs, and it is probable that in many diseases, these secretions are greatly modified. It has been thought that gravel, or the excessive formation of uric acid, is often caused in cold and moist climates by the diminished exhalation of azotic gas from the lungs. The gaseous secretion may present alteration, either in the quantity or quality of the gas exhaled, or they may occur in certain parts that do not naturally secrete any such. The consideration of each kind falls under notice in the special pathology.

Lesions of the Blood.—The alterations of the fluids should be studied, 1, in the blood; and 2, in the different humours which concur in forming the blood, or which emanate from it. The qualities of the lymph and chyle especially exert a direct influence on the state of the blood; but a modification of the other humours also tends to alter its qualities as they draw their constituent principles from it. The blood while circulating seems to be under the influence of two forces; one imparts intestine motion to each of its globules, and maintains them at a certain distance from each other, while the other tends to bring the blood to a state of repose, and is exerted in the organic parenchyma, at the point of contact of the solids and the blood. If we analyze the blood and the solids, we discover the same proximate principles in both. If we examine their physical structure, we find it identical, both consisting of globules mixed with an amorphous substance. No line of demarcation can therefore be drawn with strictness and precision between the blood and the solids with respect to their vital phenomena, internal structure and chemical composition. Physiologically speaking, we cannot conceive one to be affected without the other. On the one hand, the blood nourishes the solids and maintains their life, and on the other the solids contribute to make the blood in the actions of absorption, digestion, arterial circulation, and respiration, and to *unmake* it in the action of venous circulation,

secretion, and nutrition.* Analysis has shown the blood to be chiefly composed of fibrine, albumen, and a peculiar animal matter to which it owes its colour. When drawn from a healthy person, it separates into a solid portion—fibrine and colouring matter, and into a fluid portion consisting of albumen and water; but in many morbid states it exhibits different appearances which constitute so many pathological conditions. The fibrine may be altered either in quality or quantity. When the fibrine abounds, the clot is large, leaving very little serum, and is also dense, affording little albumen on pressure, but in some instances the clot is large, from the quantity of serum it contains, and might thus be thought to exhibit a superabundance of fibrine, did we not press it and force out the serum. Impoverished blood; on the contrary, contains an undue quantity of serum and a small soft coagulum; and here again we are liable to error, for the smallness of the coagulum may be only apparent, and arise from the firmness with which it has coagulated. The force that maintains the blood in its fluid state may be so modified to allow it to coagulate spontaneously in its vessels. Sometimes it takes place without any known cause, and in others seems to accompany a state of irritation in the parietes of the containing vessel. These polypous concretions often display marks of vitality. An opposite state of the blood, when it loses its power of coagulation altogether or coagulates very feebly, has often been met with, and can be traced to various causes, as the introduction into the circulation of various poisons, viper virus, miasmatic exhalations, &c. It may also arise from electricity, running down animals; and from the debilitating effects of disease, diet, &c. Another remarkable alteration the blood exhibits, is the formation of a whitish or yellowish layer on its coagulum, which has been found to contain an undue quantity of albumen, and to bear some analogy to false membranes. This buffy appearance of the blood occurs in certain inflammatory diseases, during the state of pregnancy, and under some circumstances not appreciable. The albumen is commonly increased to twice its natural quantity in an inflammatory condition of the system, rendering the serum quite viscid, and nearly all of it convertible into a firm mass on the application of heat. The mucous layer that has sometimes been observed at the bottom of the serum or suspended in

* It is thus rendered both in the original and the translation, and we are not quite certain that we apprehend the precise scope of the context. We should think it would be more correct to range the arterial circulation in that category of functions which is concerned, to use the author's own expression, in *making the blood and composing the solids*; and the reverse of the venous circulation.—REV.

it like a cloud is doubtless altered albumen, but its cause is not well understood. In two cases of this sort there was extensive collections of pus in the system. That the blood is often equally altered and vitiated in disease, is proved by a number of experiments and well-attested observations. The blood taken from a person labouring under putrid fever, and introduced into the system of an animal, has induced violent symptoms, gangrene, and death. The same has occurred from using the blood of a small-pox patient, or the blood of animals affected with malignant pustule or carbuncle. It also becomes surprisingly altered, and rendered unfit to maintain the system in a healthy state, as in scurvy; from the long-continued use of certain mineral poisons, as mercury, and in persons who have been constrained to support existence by resorting to insufficient unwholesome nutriment which impoverishes the blood, renders it little more than serum, and gives rise to dropsical affusions. The mutual influence which the blood and nervous system exert over each other, is little understood; still in the capillary system where the blood comes in contact with the solids, and where, in conjunction with the nerves, it gives life to the organs it traverses, the whole are linked in mutual dependence, and the nerves must act on the blood as the blood acts on the nerves. Dupuytren proved long ago that cutting the pneumo-gastric nerves prevents the venous blood from being converted into arterial in the lungs; and Mayer says that by tying them in animals, the blood in the pulmonary system coagulated. The many diseases that are connected with and arise from a morbid state of the blood, form an interesting subject of inquiry, and claim our serious consideration; still in the present state of our knowledge, we must be cautious that we do not confer on what may be as yet only hypothetical, the force and importance of well-established facts.

Lesions of Innervation.—In every disease not immediately produced by external violence, the symptoms that occur depend on a lesion of the forces that animate every living part, (innervation,) or on a lesion of organization. The former is primary and constant; the latter is secondary, variable in its nature, and inconstant in its existence. How often do we observe various disorders of the digestion, circulation, respiration and secretions, without being able to discover by dissection the least derangement in the organs that execute these functions? Still more frequently the examination of the nervous centres will not reveal to us the cause of the different disorders of animal life. There are certain morbid states in which the physical laws tend to resist their empire before the extinction of life, and this diminution of resistance to the affinities of inorganic matter gives rise to a

train of phenomena commonly called *putrid symptoms*. . Perhaps we shall be able, at some future period, to explain by lesions of organization those remarkable phenomena, but until then let us consider them as the external manifestation of a lesion of the vital powers themselves, and let us call them *lesions of innervation*. The existence of general derangement caused by sympathetic action, may be referred to either an excitation of the vital forces, their reduction below the regular standard, or to their perversion. Hence the production of three fundamental dispositions, the *hyper-adynamic*, the *adynamic*, and the *ataxic*, which impress on disease their peculiar character and regulate its course. To determine the predominance of one or the other of these dispositions, to estimate their influence and ascertain the mode of treatment they require, is the province of the physician; but it is sufficient for us to have pointed out the path to be pursued; to treat of these subjects would be to quit altogether the domain of pathological anatomy.

We have little space left for remark of any sort, but there is one point we cannot pass by unnoticed. The prominent, we might perhaps say, the only glaring fault of the work, is the reluctance of the author to admit the paramount agency of irritation in the production of disease. He even refuses to treat of inflammation as a separate morbid condition, and endeavours to supply its place by the exclusive consideration of its elements, as hyperæmia, morbid secretion, &c. which he gives as original independent conditions, without attempting to trace them to any adequate cause, at least in very many cases. He can perceive only hyperæmia, where others can demonstrate irritation and even active inflammation, thus entirely overlooking the first and all-pervading attribute of living matter to enter into action on the application of stimuli, and to cause a fluxion of the circulating fluids to a part irritated. Whenever the irritation is not plainly demonstrable in its causes or effects, that is, either in the ascertained presence of a stimulus, or in the evident appreciable results of inflammatory action, he stigmatizes the doctrine as applied to all such cases as hypothetical, although he himself has recourse to an explanation which he confesses to be in many instances equally hypothetical. This hyperæmia, this new element of a morbid condition, as it is considered by Andral, if it be not referred to irritation as its cause, must arise either from a mechanical impediment to the circulation, a local debility in the part affected, or from an impoverishment of the blood; neither of which causes can be thought to be present in very many cases. Seeing these to be insufficient and often not present, how is the occurrence to be accounted for if it be not re-

ferred to irritation? Andral, throughout the work, constantly endeavours to elude the question, and to explain away a doctrine he cannot refute by sufficient facts and arguments, by such expressions as the following. "Irritation can only be considered as one of the elementary principles of the phenomenon." p. 10. "Irritation gives the impulse to the aberration of nutrition, but does not produce it." p. 282. "The only effect which can rationally be attributed to irritation, is the tendency to deviation from the natural type which it produced in the function of nutrition." p. 336. "That irritation may be the exciting cause of every species of alteration, both of nutrition and secretion; but that, of itself, it is incapable of producing any one of them." p. 411, &c. Although we are ourselves firm believers in the doctrine of irritation as taught by the physiological school of medicine, we do not much complain of this backwardness of Andral to admit its principles and precepts. His wary and sagacious mind is admirably calculated to clear up the obscurities that have so long involved pathological science, and however the scruples of himself and other eminent cultivators of pathological anatomy may somewhat retard the general adoption of a system of medicine founded on physiological data, their researches are preparing the way in the best possible manner for the final triumph of these doctrines.

Here we close the general anatomy, and conclude the first volume, which is complete within itself, and the most susceptible of analysis. If circumstances permit we may take up the second volume in the succeeding number. In the mean time we will barely remark, that the translators deserve the thanks of the profession for the very able manner in which they have executed their task; and we hope that the work may be republished in this country, that all classes of the profession may be enabled to become familiar with its pages.

C. D.

New York, January, 1832.

ART. X. *The Library of Practical Medicine; published by order of the Massachusetts Medical Society for the use of its Fellows.* Vol. I. Containing a Treatise on Fever. By SOUTHWOOD SMITH, M. D.; and Clinical Illustrations of Fever. By A. TWEEDIE, M. D. Simpson and Clapp. Boston, 1831.

WE have on a former occasion given some account of the history, and of the institution of the Massachusetts Medical Society. We

described the objects of the society as twofold, combining in its operations the diffusion of knowledge by its annual and occasional publications, and the improvement of the police of the profession, by regulating the standard of medical education, and by promoting mutual confidence and harmony among its members; at the same time that its respectability and usefulness are increased by the distinction which it has created and maintained between educated and irregular practitioners. These last objects may now be regarded as accomplished to a degree nearly as great perhaps as the imperfection of all human institutions will allow. The society embraces a very large proportion, and is in a fair way speedily to embrace all the respectable practitioners of medicine in the state. The only limitation that formerly existed, that which required licentiates to continue in practice three years before they could be admitted fellows of the society, is done away by a recent modification of the charter, and all are now admissible as soon after they receive their license or diploma as they choose to make application. The line of demarcation too between the acknowledged physicians and the uneducated pretender, is so strongly drawn that almost no man in the community can mistake or confound them. There are those still who prefer empirics to educated physicians; but they prefer them as empirics, and employ them as such.

The plan of publication has also been changed since our former notice of the society, and it is this circumstance which has become the occasion of our again recurring to its proceedings at this time. Formerly the publications of the society were "few and far between;" for several years past they have been more frequent, a part of a volume being regularly published every year; and they are on the whole more valuable. These improvements are in consequence of the adoption of the plan, pursued by many of our public journals, of giving a premium for communications. This plan did not, however, fully answer the purposes contemplated by those who proposed it to the society. It should seem that the great body of the profession are every where little disposed to write for the press. And in regard to most of them, if they occasionally conquer this aversion, it is generally only to communicate a case or two, without any original deductions, either of theory or practice. This, as it is the easiest and most indolent, so it is the least useful mode of filling up the pages of a medical work. Series of cases, brought together and compared, so as to illustrate any important subject, whether of theoretical speculation, or of practical inquiry, are among the most valuable publications. It is those collections of detached cases, taken almost at ran-

dom from the practitioner's note-book, with little or no apparent object, but to fill out a communication, or to obtain its reward, and which, in spite of all the care of the most efficient editor, will still occupy a pretty large space in even our best medical journals, that we estimate at so low a rate.

It was another obstacle to the full success of the annual publication of the Massachusetts Medical Society, that a committee of a society can never exercise very rigidly the right of selection from the papers presented to it, and the duty of rejecting such as are of less value. Other considerations besides those which respect the merits of the several articles, unavoidably interfere with the freedom of their decisions. This difficulty is often sufficiently embarrassing to editors of other periodical works; but it is altogether impossible for a committee to act independently of such considerations, in regard to the communications of the members of the society, of which they are but the agents.

Instead, therefore, of continuing its efforts to enlarge its original publications, the Massachusetts Medical Society resolved to republish annually a volume on some subject of practical usefulness to the profession, to which they have given the title of *The Library of Practical Medicine*. This volume is distributed gratuitously to all the fellows of the society who are punctual in paying their assessments, and also to those who have honourably retired from the active duties of the society, and are exempted from assessment. By this means the individual members of the society receive for the small assessment which they are required to pay, a full equivalent, in pecuniary value, besides all the advantages and privileges to which the fellowship of the society entitles them. A still greater benefit is conferred upon the profession as a body, by the diffusion of useful works among its members. Many of them have little intercourse with their professional brethren, and little opportunity of consulting new books, or of keeping up a knowledge of the improvements in modern practice. But when a book is thus brought home to their notice, recommended as it is by being selected for such a purpose, by a committee in whom the society have confidence, and presented to them, without cost to themselves, they will not fail to read it; and the selection must be very unfortunate if good is not done by it.

The only objection that has been made to the plan is the complaint of some booksellers of its interfering with their sales. But to this objection there is a sufficient answer. In the first place, the society gives employment to the craft in the publication of their volume, and of course on terms which afford to the printers an adequate profit:

for they have neither the desire nor the means to deprive them of it. The most that the objection can amount to, therefore, is that the society, taking five hundred copies at a purchase, obtain them at a wholesale price instead of giving to the booksellers a retail profit. Were it true, therefore, that the retail sales of the booksellers were somewhat diminished and their gains consequently in some degree reduced, by this gratuitous distribution to its own members, it could not be regarded as an act of unjust interference, since a great general good is accomplished by it, and by means which afford a full remuneration to the publishers. And the society has scrupulously abstained from every thing like an interference with the retail trade except so far as the supply of a single copy to its own members.

It is far from being true, however, that this measure has any tendency to diminish the sales of medical books. On the contrary, it will necessarily increase such sales. A single volume a year will do but little to supply the wants of a truly reading man; but it may do much to excite or renovate a reading spirit in a man in whom the disposition to read has been long dormant. Hence it is one of the greatest benefits to the profession, of the gratuitous distribution of a volume annually, that the spirit of inquiry which it will excite, will stimulate its members to procure and read other books, as well as to derive knowledge from the volume distributed; and this will react in an increased demand from the bookseller. That such will be the result is not a matter of opinion merely; although the inferences upon which the opinion might be founded, are drawn from such well-established principles of human nature, that there is little room for doubt in regard to their correctness, were there no other ground for them to rest upon. But the experiment has been tried on a large scale, with the book which has been much more freely distributed than any other. In the extensive distributions of the Bible it has been found that the increase of sales has always kept place with the extent of the donations. If this is true where only one book is concerned, and the fact rests upon official authority, it must be so to a much greater extent, where the whole effect of an increased desire for books which an increase of reading will create is taken into the account.

The first volume of this Library of Practical Medicine presents strong claims to the interest of the profession, both from the nature of the subject treated of, in the two works included in it, and from the character and opportunities for observation of the several authors. Fever is always a severe, and often a dangerous disease; and a disease of such general prevalence, that in some or other of its forms it must come under the notice and treatment of every practitioner of medicine.

More than this, it in some way combines with, and produces modifications of, most other diseases; so that a knowledge of the true character and proper treatment of this disease is indispensable to a right knowledge of the character and treatment of every other.

The volume before us contains two treatises on this important disease. A *Treatise on Fever*, by Southwood Smith, M. D. and *Clinical Illustrations of Fever*, by Alexander Tweedie, M. D. One can hardly conceive a situation more favourable to an accurate observation of all the phenomena of disease than was enjoyed by both these gentlemen, for the observations upon which these treatises are founded. They were colleague physicians to the London Fever Hospital, an institution conducted with great liberality. The number of patients is sufficiently large to furnish every variety of case which the character of the disease, and of the epidemic constitution, and the condition of the population, would be likely to produce, with an extensive experience in each, and at the same time such liberal provision is made of professional and other assistance as to admit of a particular and satisfactory attention to each case, and a full record of its phenomena. Both physicians visit the hospital daily, and the patients as they are admitted are assigned alternately to each physician. Yet both seem to have had a sort of community of interest in all the patients. There is great similarity in the practice recommended by each, and both appear to have made use of the cases indiscriminately in preparing their several publications.

It is a little curious, that although the two treatises were published nearly simultaneously, and of course the observations upon which they are founded, must have been made at the same time, yet neither of them takes any notice, either of the practice or the publication, of his colleague. The subordinate medical officers are mentioned with approbation, but without any allusion by either to the other principal. The plan and objects of the two works are so different, that neither of them can be regarded as interfering essentially with the other. One is an elaborate treatise on the history, character, and treatment of fever generally; the other is a clinical report of all the fatal cases which occurred in the hospital, in a single year, with some concise remarks upon the character and treatment. While each author is pursuing thus his own way, a considerable number of the individual cases are reported a second time. This circumstance would at first view seem to constitute an objection to bringing the two works together in one volume, as presenting a useless redundancy; but on a closer examination it proves to be a decided advantage. The cases as reported in this volume are not mere copies from the house physicians

diary, but are written out by the authors themselves, each selecting the most prominent features of the case as they were presented to his own mind. Hence, in the same case there is always a considerable diversity in the phrasology, as it is reported by each author, and not unfrequently, additional particulars by one which are passed over by the other. A comparison of the two reports of the same cases, enables us also to estimate the faithfulness and accuracy of both, and especially to see how far the powers of observation of the author are influenced by the theories he has adopted. We have thus a check upon the authors' imagination, such as is not often put into our hands. How far we shall have occasion to use it will appear, as we proceed. In the present volume the facility of comparing the cases in the two works, is increased by notes of reference from one to the other.

The treatise of Dr. Smith, as we have said, is by far the most elaborate of the two works, although it sometimes bears marks of some haste in the composition. It aims at nothing less than a complete history of fever, with an entire explanation of all the phenomena, by a new history of the disease, which is expected, or at least designed, to supersede all former theories on the subject. And this too not of fever as exhibited in one place, at a particular period of time; but of fever as a universal disease, as it prevails in every part of the world and in all its different periods.

After remarking upon the imperfect state of our knowledge of fever, and the consequent demand for further observations and inquiries, and stating concisely the objects proposed in his treatise, the author gives the following account of the opportunities and facilities which he enjoyed for the investigation of the subject.

"The London Fever Hospital is capable of receiving sixty-two patients; in most seasons of the year, its wards are full; often there are numerous applications for admission which cannot be received for want of room; there pass through the wards from six to seven hundred patients annually.

"Two physicians are attached to the institution, under whose care the patients are placed alternately in the order in which they are admitted; there is one assistant physician, whose duty it is to perform the office of the ordinary physicians when either of these may be incapable of attending, and there is, besides, a medical officer resident in the house. A history of each case, containing an account of the age, occupation and residence of the patient, together with as full a statement of the symptoms of the disease and of the order of their succession as can be obtained, is entered in the journal by the resident medical officer. Each of the ordinary physicians attends daily and enters in his journal a daily report of each of his own cases. The resident medical officer goes round the wards twice a day, namely, early in the morning and late in the evening, to observe if any change requiring attention may have taken place in any patient; and if any such change be observed by the nurses during the interval between

these visits, they are reported to him by the head nurse without delay; all such events, with the modification of treatment they may have required are entered in the journals. Every case that terminates fatally is examined after death, and an account of the morbid appearances is entered in a book kept for the purpose. In this manner, in the progress of years a mass of facts accumulates relating to the statistics, the types, the symptoms, the causes, the diagnosis, the pathology, and the treatment of the disease, whether successful or unsuccessful, which both on account of the fulness and accuracy of the record and of the extent of the period it embraces, cannot but be of great value." pp. 3, 4.

All this is very well and quite satisfactory, so far as the disease which is the immediate subject of investigation is concerned. But why we are to take it for granted that every other fever is like this—why we are required to receive the poorer inhabitants of a large and crowded city in a particular year, or series of years, as representatives in respect to the character of their diseases, of all the inhabitants of the whole globe, in all their variations of rank, and condition, and habits, and climate, and in successive periods of time, we are nowhere told. This is the great mistake of most, or all the systematic writers on fever. They assume the *unity* of the disease, and take it for granted that the particular form of it which may have come under their own observation gives a fair representation of the whole. We do not here overlook the fact that Dr. Smith in a single page speaks of fever as a genus consisting of several species and varieties. But this is merely an introductory remark and appears to be immediately forgotten, for he at once relapses into regarding the phenomena of the fever of the London Fever Hospital, as exhibiting the true character of fever generally, as a single disease, and this mode of regarding it extends through his whole work.

Yet every physician in general practice must have observed variations in the character of fevers at different times; especially if his observation have extended to different climates, which cannot thus be reduced to a uniform standard. The celebrated Dr. BAILLIE, after more than thirty years practice in the same good city of London, says that after he had ceased to be a physician to St. George's Hospital, and more especially since his patients had been chiefly in the upper ranks of society, he had seen not more than three or four cases in a twelve-month of such fevers, as he had seen many of during the thirteen years that he was hospital physician.

SYDENHAM's doctrine of epidemic constitutions of the air has, undoubtedly, been carried to a great extreme, and been productive of great evils in practice. Physicians, instead of investigating the phenomena and character of individual cases of disease, have often sought out, or taken upon trust, an opinion in regard to the general consti-

tution of the diseases of the time, and the course of remedies adapted to it, and have been content to prescribe in the gross, with little attention to the peculiar features of each case. We have seen a respectable and experienced physician so confident in an opinion thus formed of the nature of a disease, as to be unwilling to countenance a younger neighbour, with whom he was in consultation, in an effort to obtain permission for a *post mortem* examination, regarding the investigation as unnecessary and useless, where the epidemic constitution was so well known. It not unfrequently happens too, when a man has gone thus far in giving himself up to his theories, that he does not stop even here; but having found all diseases for a time to be of a similar character, and to be cured by similar means, he next finds that all diseases are cured only by remedies of a particular class, while those of a different character only increase their severity and fatality. Or perhaps it would be more correct to say, that having abandoned the habit of observation, in reliance upon his belief of the universal influence of the supposed constitution of diseases, he does not watch closely enough to perceive it, if that constitution itself should change to one of a very different, perhaps an opposite character.

It appears to be in this manner, that most of the party feeling is formed among physicians in regard to modes of practice, and which in some parts of our country has proceeded to divisions and recriminations, by no means honourable to the profession. It is curious to observe too, that the extreme to which these men have arrived is, in its practical results at least, directly the opposite of that with which they began, and nearly the same with that which they at first vehemently opposed; and to which many of them think themselves still opposed. There are, in fact, two extremes in this, as well as in every other case; and here, as elsewhere, the advocates of each are more nearly in approximation than either are aware of.

The disposition to *generalization*, which forms so prominent a feature in the whole human character, is nowhere more extensively exhibited than in medical theories. Within proper limits it is, indeed, necessary in the cultivation of this as well as of every other science. But in reducing science to practice, it may well be doubted, whether it is not uniformly hurtful in its tendency. If the physician were compelled to investigate each case of disease by itself individually, without any reference to its resemblance or relations to others, inquiring only what organ or function is deranged, and how, and estimating the effects of the particular derangement upon the general system; although he might often err in his estimate of the state of each organ, we should probably have less injurious practice than we

now have, in consequence of the classification and generalization of diseases.

The doctrine of the *unity* of fever has been a fruitful source of that sort of generalization in practice, which confounds the peculiarities of individual cases. How many a man has been bled and purged incontinently, because Dr. RUSH was successful in the epidemic of 1793, in the use of the lancet, and jalap and calomel; and that too, in diseases which have little affinity to that; except, perhaps, in some remote synonym. The same thing is equally true of other modes of practice. It matters little, whether the practice be stimulating or depleting, vomiting, purging, or sweating, exciting or anodyne, unless the remedies are rendered applicable by a knowledge of each individual case; all are bad—bad in principle, and bad in the results.

But although we are not ready to concede to the fever described in this treatise, all that is claimed for it as a representative of fevers in general, yet we are not disposed on that account to detract from the merit or value of the work itself. A good description of fever in any of its forms, which clearly exhibits the phenomena of the disease in connexion with the internal derangements which produce them, and which faithfully points out the results and the rationale of the practice adapted to it, will serve as a standard of comparison for other forms of the disease, to a degree scarcely less important than if all were really alike. The practitioner is not, indeed, enabled to prescribe upon the naked authority of his author, without some reflexion or thought of his own; but he has the means of applying the author's observations to the analogous phenomena of his own case.

Such a description of fever we have, in the view we take of it, in the work before us. It is intermingled, it is true, with theoretical speculations. But the descriptions are clear and vivid, and are supported and illustrated by an extensive series of examinations upon the dead body. If it be true, that the ardour of supporting a favourite theory has sometimes betrayed the author out of a perfect impartiality in regard to the character and selection of his observations, he is so obviously unconscious of any such deviation, that it takes little or nothing from our confidence in the general integrity and faithfulness of his descriptions. It is his manifest intention, by the extent and variety of the facts with which he presents us, to afford us the means of drawing from them our own conclusions; although it is often not less plainly to be seen, that he confidently expects that our conclusions will differ little from his own.

Our author prepares the way for the exhibition of his own theory

of fever, by the comparatively easy task of showing the incorrectness or insufficiency of previous theories. After giving a concise account of the doctrines of the best ancient, and several of the leading modern writers, he says—

“All the partial and imperfect views of fever, which have now been brought before the eye of the reader, originate in one or other of the following errors, obvious as they all are; either that of assuming as a fact what is merely a conjecture; or that of assigning to the genus what belongs only to the species; or that of characterizing the disease by what appertains only to a stage; or that of mistaking the effect for the cause. On careful examination, it will appear, that one or other of these errors, which are as serious as they are palpable, has vitiated, in a greater or less degree, every generalization of fever that has hitherto been attempted.

“Thus the believers in debility derive their notion of the whole disease from the phenomena which occur in the first and last stages only; in these, it is true, they may find abundant evidence of debility; but then they overlook the intermediate stage, in which there are generally the most unequivocal indications of increased sensibility in the nervous, and increased action in the vascular systems; in this manner they characterize the disease by what appertains only to certain stages of it. Again, when they contend that debility is not only the essence of fever in general, but is really characteristic of every type of it, they affirm what is indisputable of fevers in particular seasons, in particular climates, or in particular constitutions; but beyond this, their generalizations cannot be extended; in this manner they assign to the genus what belongs only to the species. And when Cullen goes on to affirm, that the proximate cause of all the morbid phenomena is a ‘spasm of the extreme vessels,’ he commits the additional and more palpable, but not less common error, of assigning as an undoubted fact, as a real and ascertained occurrence, what is only a conjecture, and for which there is not, and for which he does not even attempt to adduce the shadow of evidence.

“Precisely similar to this, is the error of those who, for the most part belong to the same school, and who attribute the essence of fever to a morbid condition of the blood. The blood may be diseased in fever, but if it be so, these writers do not know it, or at least they do not adduce any evidence that they are in possession of such knowledge; they do not appear so much as to have questioned chemistry; at all events, it is certain that they have hitherto received no satisfactory answer. There is no evidence on record, that the alleged determination of the blood takes place in every type and every degree of fever; and if there were, it would still be but one event among many, and one that occurs late in the series, and therefore could possibly be nothing more than an effect.

“In like manner, those who maintain that inflammation of the brain is the sole cause of fever, assume as an established and admitted fact, the universal and invariable existence of inflammation of the brain in this disease.

“Inflammation of the brain, without doubt, is demonstrable of many individual cases, and of some whole types; but beyond this, there is no proof that the generalization can be carried; the evidence indeed, in regard to many cases, is entirely against the assumption, and is as complete as negative evidence can

well be; consequently, it must be admitted, that even this hypothesis, in the present state of our knowledge, is founded on the error of assigning to the whole genus what belongs only to particular species; and it would be trifling with the reader to attempt to prove, that this is still more certainly and strikingly true with regard to inflammation of the mucous membrane of the stomach and intestines—an affection which in innumerable cases in which its existence is certain, clearly appears, on the slightest examination of the succession of events, to be an effect, and not a cause. † pp. 18, 19.

He then proceeds to the development of his own views of fever as follows:—

“The frequent and formidable disease, on the investigation of which we are entering, cannot be understood until clear and exact answers are obtained to the following inquiries. 1. What is the series of phenomena which constitutes fever? 2. What are the particular phenomena which are common to all its varieties and combinations? 3. What is the order in which these phenomena occur in the series? 4. What are the organs, and what their states, upon which these phenomena depend? 5. What are the external signs of these internal states, or what are the indications by which their existence may be known? 6. What is the external noxious agent or agents, or the exciting cause or causes, of the disease? 7. What is the particular remedy, or the particular combination of remedies, which is best adapted to each state of each organ? When these questions can be clearly and perfectly answered, and not till then, we shall know the disease and its treatment. In order to make any real progress in this knowledge, we must therefore prosecute these inquiries. It appears to me that we are already in possession of ascertained facts, adequate to answer, with a high degree of certainty, though perhaps not with absolute certainty, several of these questions. In keeping these inquiries steadily before our view in our investigation, there will be this great advantage, that it will enable us clearly to perceive what we really know, and what still remains to be ascertained.” p. 20.

“The first thing to be done then, is to ascertain the course of symptoms, and the second, to determine the order in which they occur; when these two points have been made out, what is essential, and what adventitious, as well as what is the cause, and what the effect, become at once clear and certain. But the difficulty lies in discerning amidst the infinite diversity and contrariety of symptoms which the different modifications of fever present, when we may safely assure ourselves that we are in possession of all the essential phenomena. Our guide is invariableness of concurrence. If we can ascertain that a certain number of events invariably take place in every form and every degree of fever, these events will give us the particular phenomena which are common to all the varieties of the disease. If we can further ascertain that these events invariably concur in a certain order, we shall have discovered what events bear to each other the relation of cause and effect. And the establishment of this relation of events, this constant connexion with each other, this uniform antecedence and sequence, appears to me to be the only theory after which it is consistent with the principles of sound philosophy to search. If I have endeavoured to establish this connexion, and have thus ventured, as I conceive in a

strictly philosophical sense, to propose a theory, in doing so, I have carefully restricted myself to the attempt to deduce a legitimate conclusion from facts previously ascertained. It does appear to me that these three points, namely, the common phenomena, the invariableness of their concurrence, and their mutual relation are satisfactorily established. Whether I shall be able to communicate this conviction to the reader, I do not know; but I hope he will at least coincide with me in opinion, that this mode of investigating the disease affords us the best chance of arriving at satisfactory results.

“ Whatever be the phenomena of fever, they depend upon certain states of the organs. Whatever be the noxious agents, or the exciting causes of the disease, and however they operate, they can induce the disease only by bringing about a certain condition in a certain number of organs, the individual events constituting the disease being nothing but certain changes in these organs. It is therefore of paramount importance to ascertain what the organs are which are implicated; what the conditions are which are induced in them; what organ sustains the first assault, and what organs are attacked in succession. The pathology about to be laid before the reader will demonstrate the first two points; the establishment of the last two will be attempted by an examination of the history of the cases.

“ Without doubt the life or death of the patient depends upon these conditions of the organs. In a practical point of view, therefore, this is the kind of knowledge with which it is of the greatest importance that the practitioner should be familiar. Some of these conditions are indicated by certain signs during life; some of these indications are obscure, and may be easily overlooked or mistaken by those who have not acquired an accurate and extensive acquaintance with the disease. On the other hand there are external appearances which are extremely apt to suggest a false notion of the state of the internal organs. These fallacious appearances are sure to lead those whom they deceive into a mistaken, often into a mortal practice. Certain conditions of vital organs, if allowed to remain long, will terminate in fatal changes of structure.

“ Certain remedies, if applied in due season, and with due vigour, are capable of removing those conditions. Life, therefore, must sometimes depend upon the power of making this diagnosis with accuracy. Of some of these conditions the diagnostic marks are clear and certain; those which indicate other conditions, in the present state of our knowledge, are obscure and uncertain. I have thought no labour too great to put the reader in possession of all that I have been able to ascertain with regard to this most important part of the subject. In the attempt to communicate this information, I am conscious that I may incur the charge of tediousness, on account of the number of repetitions which occur, and which I have allowed to remain, because I could see no means of removing them without sacrificing clearness to brevity. Elegance and conciseness in a work of this nature ought not for a moment to be considered if they endanger its practical usefulness. A knowledge of the condition of the internal organs in fever can alone guide us to a rational and successful treatment of this most dangerous disease. It is only by examining the body after death that we can acquire this information; it is only by observing the symptoms during life, and comparing them with the morbid appearances after death, that we can discover the signs which indicate the existence of these states. For these reasons

'I have not hesitated to give numerous cases, and to detail many dissections. If after the study of these cases and dissections the practitioner be enabled at the bed-side of the fever patient to discover with greater precision and certainty than heretofore the condition of the brain—the condition of the lungs—the condition of the intestines, he will not think the time he has devoted to the investigation ill spent, nor shall I think myself without reward for the labour it has cost me to draw up the record. It is only when from external appearances we are able to see what is going on within each of the great cavities of the body, as clearly as we should do if their walls were transparent, that our interference can be sure of doing good, or secure from doing mischief; it is this kind and degree of knowledge alone which can teach us both when to act and what to do; and what is of almost equal importance, when to stop and to attempt nothing; and if the perusal of this work should contribute in any measure to the attainment of this knowledge, I shall not have laboured wholly in vain 'to add something to the treasury of physic.'” pp. 21-23.

If by “condition of the organs” the author could be supposed to have reference to changes in the state of the functions, as well as of the structure of the several organs, few perhaps would be found to differ from him in this view of the disease. But this is far from being his view of the matter. Not from this passage only, but from the whole work, it appears that he recognises no derangement of the powers or functions of any organ which does not bring with it the evidence of its existence by a positive change of structure, manifested by certain diagnostic signs during life, and clearly exhibited by dissection after death. Thus, the whole class of *functional* diseases, in contradistinction from *organic*, is to be thrown out of our consideration.

This is a great change in the philosophy of disease, and one which we are not yet prepared to adopt in the aggregate. It is indeed not unlikely to be true, that every change of function is accompanied by some variation in the condition of the solids which enter into the minute composition of the organ; and it is perhaps possible that our improvements in anatomical science, both healthy and morbid, may eventually extend so far as to enable us to appreciate all such changes, and apply them to the purposes of pathology and practice. We are willing to allow too that a diligent and vigilant examination might often discover organic changes of structure in cases which are now suffered to pass as purely functional. This is especially the case with the diseases of habitual drinkers of ardent spirit. Every practitioner knows how badly these patients bear bleeding, and other depletion, even in diseases which freely require them in other persons. This fact is generally attributed to exhaustion of the excitability of the living body by unnatural stimulus, and perhaps in most cases this is the only explanation we can give of it. Yet we have some-

times seen in such cases, and with no more than usual indication of it in the character of the symptoms, suppuration and other extensive organic changes in the brain and its membranes. It would require much more extensive observation of similar cases, with similar results, to establish this as a settled rule in pathology, especially since it is contradicted, by the negative testimony at least, of so many examinations in diseases of inebriates, where no such changes of structure were discovered.

It is to be expected, that with the advancement of medical knowledge, the number of diseases that are regarded as purely functional will be diminished, by the transfer of many to the class of those whose effects on the human system are more fully understood. But before we can give our consent to such a transfer, we must be well satisfied that the claim to a right understanding of a given disease is well founded. We surely are not to be called upon to take it all for granted, and rest satisfied with the opinion because an author chooses to make it the basis of a new system of pathology for an extensive class of diseases. It is true that a great variety of morbid changes of structure are exhibited in the dissections with which this work abounds. But these changes are not so connected with the symptoms of each case as to furnish the necessary evidence that they are dependant upon each other. The cases are detailed for an entirely different purpose, and the author seems scarcely to be aware that he is taking new ground, or ground that is not already perfectly settled, in the position to which we have referred.

We proceed with our author's theory of fever. And here we are happy to be able to give it in a condensed form in his own words.

"In relation to our present subject then, the first object of inquiry is, what are the events which invariably concur in fever?

"Where shall we look for the events? Not in the symptoms. Symptoms are not events; they are only indications of events; symptoms depend upon states of organs; they are the external and visible signs of internal, and, for the most part, as long as life continues, invisible conditions. It is then to the state of the organs that we must look for the events of which we are in search. Are there any states of any organs that always exist in fever? Are the states constant? Are the organs affected constant; and can both be ascertained? If this can be truly answered in the affirmative; if it can be proved that there are certain conditions of certain organs which invariably exist in fever, in every type, in every degree, in every stage of it, we shall have arrived at a satisfactory conclusion relative to the first part of our inquiry. The evidence is as complete as observation during life and inspection after death can make it, that a morbid change does take place in a certain number of organs in every case of fever, from the most trivial intermittent to the most alarming continued fever, from the mildest plague to the most malignant typhus; that at the two extremes

of this scale, and at all the intermediate gradations of it, there are certain organs which are always affected, and that the affection in all is similar. The identity of the organ is inferred from the indications they give of disordered function during life; the identity of the affection is inferred from the similarity of morbid appearances which they exhibit on examination after death.

"The organs affected are those which constitute the nervous system, those which constitute the circulating system, and those which constitute the systems of secretion and excretion. The spinal cord and the brain; the heart and the arteries, especially the capillary extremities; the secreting and the excreting organs, which in fact are composed essentially of the capillary extremities of the arteries; the secreting and excreting extremities of these arteries, especially as they terminate in the external skin and in the mucous membranes which form the internal skin; this is the chain of diseased organs: derangement in the nervous and sensorial functions; derangement in the circulating function; derangement in the secretory and excretory functions; this is the circle of morbid actions.

"There never was a case of fever in which all these organs and affections were not more or less in a morbid state; there never was a concurrence of this morbid state in this complete circle of organs, without fever. The events which invariably concur in fever, then, are a certain deviation from the healthy state in the nervous and the sensorial functions; a certain deviation from the healthy state in the circulating function; a certain deviation from the healthy state of the functions of excretion and secretion. A deviation from the healthy state in one circle of actions will not present phenomena of fever; a deviation from the healthy state in two circles of action will not present the phenomena of fever; there must be a deviation in the three circles before fever can exist. Such then are the common phenomena of fever." pp. 27-29.

"The order of events then is, first, derangement in the nervous and sensorial functions; this is the invariable antecedent; secondly, derangement in the circulating function; this is the invariable sequent; and thirdly, derangement in the secreting and excreting functions; this is the last result in the succession of morbid changes.

"Supposing the matter of fact to be as it is here stated, and the proof that it is so will be adduced hereafter, it is clear that we are in possession of the true characters of fever. We know the events, we know the order in which they occur, we know, therefore, what it is that constitutes the disease, and we know, consequently, what it is by which it is distinguished from every other malady. No other disease exhibits the same train of phenomena in the same order of succession. In inflammation some of the phenomena are the same, but the order in which they concur is not the same; and this affords a clear and universally applicable mark of distinction between fever and inflammation. In inflammation there is similar derangement in the secreting and excreting functions; there is also sometimes similar derangement in the circulating function; but the derangement in the nervous and sensorial functions is seldom if ever similar; the derangement that does take place in these latter functions, while it is apparently different in kind, is certainly and invariably different in the order of its occurrence.

"In pneumonia, in enteritis, in hepatitis, the spinal cord and the brain are never the organs in which the first indications of disease appear; the earliest in-

dications of disease that can be discovered 'have their seat in the affected organ' itself; it is only after the disease has made some progress that other organs and functions are involved, and apparently the last to be involved, and certainly the least to suffer, is the nervous system.

"We can now then answer the question so often asked—are fever and inflammation the same? and if not the same, in what do they differ? Fever and inflammation are not the same, because the term fever is appropriated to the designation of a certain number of events which occur in a certain series: the term inflammation, on the other hand, expresses another series of events, each event composing this train succeeding each other in a different order; and the difference between the two series of events is precisely this difference in their individual phenomena and in their order of succession." pp. 29, 30.

The distinction here attempted between fever and inflammation is arbitrary and unsatisfactory. A certain round of phenomena is assumed as essential to the character of fever, and whatever comes not within the circle is pronounced not to be fever; not because the phenomena themselves are not those of fever—for all the phenomena of inflammation are included within his essential characteristics of fever—but because they do not arise in the prescribed order—in other words, because they are too intractable to yield to their place in the new theory. Fever is made up of certain events, and these events include all the changes produced by inflammation; but because inflammation may also exist out of the train of those events, it must be excluded as a distinct disease, lest it should disturb that beautiful order of events upon which the whole theory rests. Doubtless inflammation is a distinct disease; but it is so for simpler and better reasons than for the far-sought reasonings of theoretical speculation. As well might we say that peritonitis is not inflammation, because it has not the cough and expectoration of pneumonia, as to say with our author, that increased vascularity of the mucous membrane of the bronchi, with purulent secretion, &c. is in one case inflammation, in the other not, according as it is or is not preceded by certain affections of the brain and nervous system.

Having thus stated his theory, our author breaks forth into the following glowing description of its universal adaptation to all varieties of fever.

"Supposing the proofs hereafter to be adduced to be conclusive, that the events in fever and their order really are what has now been stated, how clearly and beautifully does this view of the disease enable us to recognise one and the same malady through all the modifications it undergoes, and therefore through the countless aspects it assumes. Out of the system of organs that are always affected in fever, some may be more and some less diseased; and it is easy to see how, from this diversity alone, the utmost variety may arise in the external character of the disease. Thus at one time the spinal cord and the brain may be intensely

affected; consequently the patient may be seized with violent pains in the limbs; with ferocious head-ache; with early delirium, which may rapidly increase to such a degree of violence as to require restraint; or, on the contrary, all the muscles of voluntary motion may be seized instantaneously with such a loss of energy that they may truly be said to be paralyzed: at the same time the sensorial faculties may be overwhelmed almost as completely as they are in apoplexy; thus may be formed one type of fever: and such a concurrence of symptoms is actually found to exist: it ushers in the plague when it first stalks into a devoted city to sweep away its thousands and its tens of thousands.

“At another time the disease may seize with peculiar violence on the organs of secretion, and especially upon those which belong to the digestive apparatus: hence the liver may suddenly pour forth an immense flow of bile, so vitiated in quality as to irritate and inflame whatever it touches, and so abundant in quantity as rapidly to diffuse itself over every part of the body, and to tinge almost every tissue and every fluid: at the same time the stomach and intestines may be involved in such acute disease that the powers of life may be exhausted in a few hours by incessant vomiting and unconquerable purging: thus may be formed another type of fever; and such a course of symptoms actually occurs in the yellow fever of the West Indies.

“Now we may witness a severe though a less violent affection of the spinal cord and the brain, than occurs in plague. There may be present great pain in the back and limbs; intense head-ache; early and violent delirium; a burning skin; a quick and strong pulse; urgent thirst, and constipated bowels: or, on the contrary, there may be not pain in the head, but giddiness; not delirium, but stupor; not a burning hot, but a moderately warm or cool skin; not a frequent and strong, but a frequent and feeble pulse. In either case we have a fair specimen of the common fever of our own country, the first forming the variety which may be termed acute, the second sub-acute cerebral.

“Now again we may witness a concurrence of symptoms very similar to the latter in the commencement of the attacks, only that there is from the beginning greater prostration of strength, and a rapid increase in the derangement of the nervous and sensorial functions, together with a brown and dry tongue, a tender abdomen, and dark and offensive stools: thus may be formed another type of fever to which is commonly assigned the name of typhus.” pp. 31, 32.

It is an easy matter to frame the theory which shall adapt itself to a great variety of occurrences. But to establish the theory upon the basis of facts and sound reasoning, *hoc opus, hic labor sit*. It would be doing great injustice to Dr. Smith, however, if we were to leave the impression that he rests the truth of his theory at all upon this ground of adaptation. His constant appeal is to observation and fact, with how much success we shall presently see; and having given an outline of his view of the nature of the disease, he proceeds to a particular description of fever as it is exhibited in its symptoms and by dissections. In doing this, although his object is of course to illustrate and support his particular views, he enters into his descriptions with so much ardour, that he seems at times almost to forget the tram-

mels of his theory. And it is no difficult matter for the reader, when in pursuit of practical instruction, to forget it entirely; and then he will find a rich fund of interesting and useful information. We regard this as by far the most valuable part of the treatise; perhaps we might say the part which alone can secure to the work any permanent reputation in the profession.

We cannot follow the author in detail in his descriptions of fever. A clear and animated description will not admit of being condensed into an abstract without becoming dull and obscure. He does not regard with any favour the divisions of fever into synocha, synochus, and typhus; for, as in his view, all fevers are of the same general character, the only distinctions necessary to be observed between the several cases are such as have reference to the intensity of their action upon each of the several organs. In order to avoid coining new terms, however, he retains those of synochus and typhus, taking care to explain them as expressing only different degrees of severity. Each of these has two sub-divisions, *mitior* and *gravior*, and each of these again is farther distinguished as it is accompanied by severe cerebral, thoracic, or abdominal affection.

We have said that the author often enters into his descriptions of the phenomena of fever with great freedom and spirit, as if released from the necessity of supporting a favourite theory. Yet he as frequently returns to it, and his descriptions are interspersed with remarks designed to show the applicability of the various events described to the pathological views before explained. Instead of following him through his details of symptoms and morbid appearances, we may therefore take this occasion to inquire how far his peculiar views of the nature of the disease is supported by them.

It must here be remembered that an affection of all the organs concerned in producing the train of events which, in the view of the author, constitutes fever in every case of the disease, and of sufficient severity to show itself by a change of structure, is an indispensable part, or rather the great whole of his theory. There must in every case of fever be "the invariable concurrence of a particular number of events," and added to it "invariableness of concurrence in a particular order." "In the organs," we are told, "we can find a perfect uniformity; their condition is as fixed and invariable as the return of day and night." "The causes of fever, whatever they be, under the same circumstances, always produce the same conditions of the organs." And these conditions, and the order in which they show themselves, are, "first, derangement in the nervous and sensorial functions; secondly, derangement in the circulating function;

and thirdly, derangement "in the secreting and excreting functions."

A careful comparison of the cases so abundantly furnished in the two works before us, will enable us to judge how far these opinions are supported by them. For as it is assumed to be the essential character of the disease, that certain affections should have manifested themselves, if the evidence of any of these affections is wanting in any case, certainly if it is wanting in any considerable number of cases, then the whole theory necessarily falls. Now, the impression which was made on our own minds, and which we believe will be made on the mind of any one, on a first perusal of the descriptive part of the work, is that of the great diversity of the cases, illustrating a great variety of affections having but a general relationship between them. Much of this diversity may be accounted for, on a closer examination, by the different degrees of intensity of the several organs in the different cases. But there is also much that cannot be so resolved into uniformity.

We may discover in this part of the work a readiness of accommodation of the facts described to the theory adopted, which shows how strongly that theory has taken possession of the author's mind, although we see not the least appearance of intentional unfairness. For example, the affection of the head, which is regarded as the first in the train of events that constituted fever, is of so general a character, that any morbid change within the cranium is taken as proof of its existence. Vascularity of either of the membranes, or of the brain itself—deposition of lymph, or serum, or pus, between the membranes, or in the ventricles, or at the base—hardening or softening of the substance of the brain—are all, or either of them, received as satisfactory evidence that fever has been there. We may well ask if some or other of these morbid appearances within the cranium will not be formed in a large proportion of cases of death produced by any other disease whatever. And yet enlarged as is this allowance for the effects of fever in the head, there is a considerable proportion of cases in which none of them are discovered. Of about a hundred cases in which the state of the head, as exhibited by dissection, is reported by Dr. Smith, the appearance of the head in nine is said to be natural. And it is worthy of remark too, as it regards the position that affections of the organs are always connected with some change of structure, that some of these nine cases exhibit their full share of pain in the head, confusion of mind, and delirium, during life, although no traces of the derangement are left upon the organ after death.

The absence of marks of disease, which, according to Dr. Smith's theory, should be always present, becomes still more striking by a reference to Dr. Tweedie's report of the cases during the year of his clinical illustrations. The whole number of deaths that year, the cases of which are all reported, was seventy-two, only fifty-four of which were examined. Of this fifty-four, in fifteen the appearances in the head are declared to be healthy; those of the chest are so in fourteen, and those of the abdomen in twelve.

This leads us to take notice of the cases of which the reports are repeated in the two works. It might have been expected that where there is so strong a predilection for a favourite theory, those occurrences which go to support that theory should be stated somewhat more strongly than they would be by an indifferent observer, and some instances of this kind appear; for example, when Dr. Tweedie says, there were "slight appearances of inflammation of the membranes of the brain, with increased serous effusion under the arachnoid, and also in the lateral ventricles," p. 338, Dr. Smith says, "arachnoid highly vascular; effusion beneath all the membranes; more fluid than natural in the lateral ventricles." p. 160. Again Dr. Tweedie says, "slight serous effusion beneath the arachnoid," p. 339, and Dr. Smith, "effusion between all the membranes, and into all the ventricles." p. 182. Similar differences in the strength of the expression may be observed in many other instances; but in none do they essentially change the general aspect of the case.

In narrating his cases, Dr. Smith has distinguished those morbid appearances which he does not regard as the effects of fever from those which are produced by that disease. This mode of proceeding exhibits another facility by which he is enabled to escape from the inconvenience of untractable symptoms or occurrences. Many of the distinctions appear to us to be wholly arbitrary, or at least to have no better ground to rest upon than the fact that some occurrences are more frequently attendant upon fever than others. For example, inflammation of the mucous membrane of the lungs is always regarded as one of the legitimate effects of fever, while inflammation of the serous coat, even when the marks are those of recent affection, is excluded. Yet this last occurrence is found nearly, or quite as frequently as the other.

Infiltration into the substance of the lungs is sometimes included among the effects of fever, and at others rejected. Tuberculated lungs are in one instance at least included, although generally tubercles, hepatization, and other changes of a more chronic character, are regarded as accidental. The same irregularity is observable in

assigning the morbid appearances discovered in the abdomen. In general, inflammation of the mucous membrane, here as in the thorax, is set down to the fever, and that of the serous membrane to other causes, even when the intestines are found adhering together as the consequence of recent inflammation in the immediate vicinity of ulcerations in the mucous membrane. Inflammation and ulceration of the mesenteric glands, (and in one case which Dr. Tweedie calls scrofulous ulceration,) are attributed to the fever. So also are hardenings and softenings of the spleen and the pancreas, while similar changes in the texture of the liver are generally excluded. It may perhaps be that some of these irregularities are the result of accident or inattention, or of typographical errors. But it is impossible not to feel some distrust of a theory which requires or admits such remarkable facilities for escaping from unfavourable conclusions.

We make one more extract from this part of the work, in order to give the author's summary of his theory.

"In conclusion then, the doctrine of fever, which appears to approximate most nearly to the truth, may be summed up in few words. The immediate cause of fever is a poison which operates primarily and specifically upon the brain and the spinal cord. The diseased state in which these organs are brought by the operation of this poison, deprives them of the power of communicating to the system that supply of stimulus, (nervous and sensorial influence,) which is requisite to maintain the functions of the economy in the state of health. The organs, the seats of the functions, deprived of their supply of nervous influence, become deranged, the derangement in each taking place in a fixed order, and in a determinate manner. Subsequently to the nervous and the sensorial, the organs the next to suffer are those of the circulation, then those of respiration, and ultimately, those which belong to secretion and excretion. The condition of the nervous system which produces this derangement in this circle of organs, occasions further, in that portion of the circulating system which consists of the capillary blood-vessels, that peculiar state which constitutes inflammation; hence inflammation is almost always established in one or more of the organs comprehended in the febrile circle, and sometimes in all of them. The peculiar and primary affection of the nervous system, which is here assigned as the cause of inflammation, does not become identical with inflammation, but superadds the morbid condition of inflammation to its own; does not lapse into or terminate in the inflammatory state, but accompanies it, and by this combination modifies in a peculiar manner the inflammatory process." pp. 203, 204.

We have followed our author patiently, and we trust fairly, through all his proofs of the positions upon which his theory is founded; and the result is, that to our minds he does not furnish satisfactory evidence of such conditions of the several organs, and such an unvarying

train of event as his theory supposes. We have hardly been able to escape from some feeling of surprise, that with so great a fund of materials before him, and with such power of using them, he has not made out a much stronger case than we think he has presented to us. We account for it only by the belief that his fairness and integrity of mind have shunned to seek out facts on which to establish his theory, although when the facts are freely and truly presented, so far as it is possible for any man, whose predilections are so involved in them, to present them fairly, he has not failed to make the strongest use of them for this purpose.

There is something in a high degree irrational in supposing two independent causes of inflammation, the one arising from the train of events which produce fever, the other entirely disconnected from all such events. This absurdity, (it is not too much to call it so,) we are driven to by the determination to acknowledge only a single agency operating at the same time to produce disease. And yet how often do we, in practice, find diseases to be modified and complicated by occurrences obviously independent of each other in their origin. Nay, we may rather say that death is rarely produced in our climate by a simple uncombined disease, compared with the frequency with which it is the result of a perplexing complication of disorders. There is no difficulty in supposing that the causes which produce inflammation should operate at the same time with those which produce fever, as well as, or even more frequently than, at other times, and the greater or less predominancy of either the fever or the inflammation, will give rise to all the modifications between them which are ever observed in practice.

We pass over the chapter on the cause of fever, because it is a subject which has been abundantly and ably discussed among us recently. Of our author's treatment of fever we have something to say, but we are unwilling to enter upon it at the close of so long a discussion, and we therefore defer our remark to another number.

E. H.

ART. X. *Report on the Epidemic Cholera Morbus, as it visited the Territories subject to the Presidency of Bengal, in the years 1817, 1818, and 1819.* Drawn up by order of the Government, under the superintendence of the Medical Board. By JAMES JAMESON, Assistant Surgeon and Secretary to the Board. Calcutta, 1820, pp. lxxxiv and 324, 8vo. With a map.

Sketches of the most Prevalent Diseases of India; comprising a Treatise on the Epidemic Cholera of the East, &c. &c. By JAMES ANNESLEY, Esq. Madras Medical Establishment, &c. &c. &c. Second edition, London, 1831. With a map.

Treatise on Cholera Asphyxia or Epidemic Cholera, as it appeared in Asia, and more recently in Europe. By GEORGE HAMILTON BELL, Fellow of the Royal College of Surgeons, Edinburgh, late Residency Surgeon, Tanjore. Edinburgh and London, 1831, pp. 150, 8vo. With a map.

A History of the Contagious Cholera, with Facts explanatory of its Origin and Laws, and of a Rational Method of Cure. By JAMES KENNEDY, Member of the Royal College of Surgeons, London, pp. 291. With two maps.

Quelques Réflexions sur le Choléra Morbus. Par le Dr. JAEHNICHEN, Membre du Conseil temporaire de Medecine de Moscou. Moscow, 1831.

History of the Epidemic Spasmodic Cholera of Russia; including a Copious Account of the Disease which has prevailed in India, and which has travelled under that name from Asia into Europe. Illustrated by numerous Official and other Documents, explanatory of the Nature, Treatment, and Prevention of the Malady. By BISSET HAWKINS, M. D. &c. London, 1831. pp. 306. With a map.

CHOLERA is the absorbing topic at the present moment in the medical world, and even in the political, it divides attention with the questions, momentous as they are, which are now agitating the nations of Europe, and shaking to the very foundations their ancient institutions. The mystery which seems to hang over the origin and mode of propagation of this pestilence, has invested it with a sort of fearful interest; whilst there is something so appalling in the steadiness with which it has advanced over a large portion of the globe, unimpeded by oceans, or mountains, or winds, or the artificial barriers by which man has attempted to arrest its progress—in the rapidity with which it destroys its victims, often striking them to the earth, to expire on the spot where they have fallen—and in the awful

mortality it has caused, compared to which the destruction of life in the most destructive wars sinks into insignificance—that it would be indeed extraordinary, were it not the subject of universal attention. Apart, however, from its general interest, it has for us, as physicians, higher claims to attention. Commencing only a few years since near the borders of the Ganges, it has invaded nearly the whole of Asia, overrun the east and north of Europe, and at the latest dates was steadily advancing, threatening to extend over the remainder of the eastern hemisphere, and affording even grounds for fear that the western world may not escape its visitation. It consequently becomes our duty to render ourselves familiar with its history, character, and treatment, since we know not how soon we may be called upon to contend against its ravages. The anomalous features which this disease has exhibited, the contradictory and even irreconcilable statements that have been given of its etiology, and the diversity of sentiment entertained as to its pathology and best mode of treatment, render the acquisition of correct knowledge in relation to these points, a task of no little difficulty. We shall endeavour to assist our readers in the accomplishment of it, by laying before them the most authentic facts that we have been able to glean from the various sources that have been open to us, and arranged in the best manner that the late period at which many of the documents were received, will permit. Without further preface then we shall commence with a brief sketch of the history of the complaint.

Cholera is not a new disease. It is noticed in the earliest records of the science. HIPPOCRATES distinctly speaks of it, and it is very accurately described by ARIZÆUS, of Cappadocea. SYDENHAM notices its prevalence in London, in 1669 and in 1676; and HUXHAM, in 1741. It existed extensively in Paris at various periods, particularly during the summer of 1730, and in July, 1780; and perhaps there is no country in which sporadic cases do not occasionally occur. In India it appears to have been endemic from the most remote periods. Mention is said to be made of it in the ancient medical writings of the Hindoos, and it is noticed by the earliest European writers on the diseases of that country. BONTIUS, a Dutch physician, residing at Batavia, and who wrote in 1629, very accurately describes it. LEBEGUE DE PRESLE speaks of its having prevailed in upper Hindostan, in 1762, where he says it destroyed 30,000 negroes, and 800 Europeans. Dr. PAISLEY, in a letter from Madras in 1774, states that it was often epidemic, especially among the blacks. M. SONNERAT, in the account of his travels in India, between the years 1774 and 1781, mentions that cholera prevailed on

- the Coromandel coast, and at one period more particularly assumed an epidemic and malignant character.* CURTIS, in his work on the diseases of India, and GIRDLESTON, in his essay on the spasmodic affections of that country, speak of an unusual prevalence of the disease during 1781 and 1782. It prevailed in the Northern Circars in the early part of 1781 and in the latter end of March it affected at Ganjam, a division of Bengal troops, consisting of five thousand men, who were proceeding under the command of Colonel Pearse of the artillery, to join Sir Eyre Coote's army on the coast. Men previously in perfect health dropped down by dozens, and those even less severely affected were generally dead or past recovery within less than an hour.† Above five hundred were admitted into hospital in one day, and in three days more than half the army were affected. The disease was referred to the heavy dews and great vicissitudes of the weather, connected with the peculiar situation of the troops; they had been marching almost incessantly for six days through sand and salt water, and were at length so enfeebled as scarcely to be able to move. A violent wind blew day and night along the whole shore, and although it was not so strong at night, it was then accompanied with such a penetrating moisture as to wet through the thickest woollen clothes. The troops were besides in no condition to withstand the inclemency of the season. They had no tents, and few possessed even a blanket to shelter them on getting to their ground. They generally marched in the night, and many suffered by incautiously lying down, while warm from exercise, and falling asleep, exposed to the influence of a damp and noxious atmosphere.‡

During the months of April and May, 1782, the disease prevailed at Trincomalee, and in Sir Edward Hughes' squadron at Madras.

In April, 1783, it broke out at Hurdwar, on the Ganges, a spot held particularly sacred by the Hindoos, where an immense concourse of people annually assembled for the purpose of ablution in the holy stream. The year in question, the number of persons collected was believed to amount to between one and two millions. It is the custom of the pilgrims to repair to the bed of the river, where they pass the night with little, if any shelter; many persons being crowded together under the cover of a single blanket thrown out as an awning. The temperature is very variable; the days being hot and the nights cold, with heavy dews, and sudden chilly blasts from the clefts in the mountains. On the present occasion these causes§ were

* Annesley, p. 7. † Bengal Report, p. xvii. ‡ Idem, p. xx, i.

§ "One manuscript in our possession says, the disease broke out on the springing up of an easterly land wind during a hot night, and carried off innumerable persons."—*Bengal Report.*

sufficient to generate the cholera, which broke out soon after the commencement of the ceremonies, and raged with such extreme violence, as to cut off in less than eight days, above twenty thousand victims. So confined, however was its influence, that it did not reach the village of Jawalapore only seven miles distant, and ceased immediately on the concourse breaking up on the last day of the festival.*

In 1787 the disease prevailed at Arcot and Vellore, and about the end of March, 1790, it appeared in a detachment of Berghal troops, under Colonel Cockerel, whilst marching to Seringapatam. The weather is said to have been very uncomfortable, a fresh southerly wind prevailing during the day, increasing in strength towards mid-day, and dying away in the evening. A calm night succeeded, close and sultry in the early part, and damp and chill, with heavy dew, and slight easterly wind from the sea towards morning. The days were cloudy, and the atmosphere loaded with vapour. On the 15th of April the activity of the disease was heightened by a heavy squall of wind and rain, which overtook the detachment at Manikpatam, on the north side of Chilka lake. From this time until the middle of June, when the detachment had passed Ellore, and the weather had become more moderate from frequent rains, the disease proved very fatal. The troops had no tents, and were sheltered from the inclemency of the night by only a blanket stretched across a pole, and even this was not possessed by the camp followers. The troops were much harassed by long marches on a sandy soil, frequently not affording water, and from the difficulty of dragging the guns over very bad roads, they frequently did not reach their ground until sunset. In the middle of the day the thermometer was as high as 124.°†

In fact a disorder possessing the principal characters of cholera appears to have prevailed more or less endemically during the hot and rainy seasons of every successive year in the lower provinces of Hindostan, but chiefly limited in attacks to those whose constitutions had been debilitated by poor, ungenerous diet, and by hard labour in the sun, and who were badly clothed, and frequently exposed in low and foul situations to the cold and damp air of the night. It rarely occurred during the dry months. Europeans were scarcely ever affected by it, and the better class of natives were rarely subjected to its influence.‡

No positive evidence has been found of its having prevailed extensively as an epidemic previously to 1817, though Mr.

* Bengal Report, p. xvi.

† Idem, p. xxii.

‡ Idem, p. 2.

Bell thinks it probable that "the tremendous pestilences, which are so frequently described by native historians as having devastated Indian armies, were the cholera.* It must also be mentioned that it appears to have assumed an epidemic form in 1781, the period at which it attacked Colonel Pearse's detachment at Ganjam, for the supreme government, in communicating this latter event to the court of directors, state that the disease was not confined to Ganjam; but afterwards found its way to Calcutta, and after chiefly affecting the native inhabitants, so as to occasion a great mortality during the period of a fortnight, pursued its course to the northward.†

It is much to be regretted that all attempts to trace its further progress has proved fruitless.

The disease, it is generally conceded, first acquired its present epidemic character in 1817, and it appears to have first attracted particular attention on its breaking out at Jessore, a large and populous town, about sixty-two miles east of Calcutta. It did not originate there, however, as is usually represented, but broke out simultaneously in various and distant parts of Bengal. As early as July, it appeared at Sunergong, and had even begun to prevail epidemically in the distant provinces of Behar and Dacca; on the 11th of the month it broke out in the city of Patna, three hundred miles north-west of Calcutta, and spread to the contiguous station of Dinapore, and to the adjacent villages, early in August, and by the middle of the month, it appeared in the remote province of Silhet. On the 23d of August it was raging at Chittagong, far round the eastern corner of the Bay of Bengal, at the same moment in Rajshaky, a central district lying east of the Ganges, and not a week afterwards in the high and distant tracts of Bhaugulpore and Monghyr.

On the 28th of August, it was reported to the government that a malignant species of cholera had appeared at Jessore, and was cutting off from twenty to thirty persons daily. It was stated in the report, that "the inhabitants astonished and terrified at the unaccountable and very destructive inroads of the pestilence, are flying in crowds to the country, as the only means of escaping impending death."‡ In the short space of a few weeks it destroyed upwards of six thousand persons.

The exact date of the appearance of the disease in Calcutta, has not been ascertained, but there appears no doubt that many cases occurred among the native population as early as the middle of Au-

* Bell, p. 70.

† Bengal Report, p. xxi, ii.

‡ Idem, p. 3.

gust. At this time, however, the disease appears to have exhibited a mild type, but by the latter end of the month it assumed a malignant form, and during the first days of September it committed great havoc among the natives.

On the 5th of the month the disease appeared among the European inhabitants, and on the 15th, an official notification of the existence of cholera in Calcutta was forwarded to the government.

By the latter end of September the disease was prevailing throughout the whole province of Bengal, from the most easterly limits of Purnea, Dinagepore and Silhet, to the extreme borders of Balasore and Cuttack; and from the mouth of the Ganges nearly to the confluence of that river with the Jumna, a space of upwards of four hundred miles in length and breadth. In this area of several thousand miles, few places escaped the invasion, and the cities of Dacca and Patna, the towns of Balasore, Burrissaul, Rungpore, and Malda, suffered severely. The large and populous city of Mooshedabad, which, from extent and local position, was apparently favourably circumstanced for the attacks of the epidemic, it is remarkable, escaped with comparatively little loss, whilst all around was severely scourged.

During the autumn of 1817 the disease extended itself to Muzufserpore and beyond the precincts of Bengal, and appeared at Chuprah, and at the cantonment of Ghazeepore; its attacks in these places were, however, confined to the towns themselves, or villages in their immediate vicinity; the principal portion of the adjoining country, at this period, entirely escaping the disease. Early in November it attacked the grand army, then stationed at Bundelcund, a portion of the Allahabad province. This army had been assembled in anticipation of a war with the Pindarees, and the centre division consisting of ten thousand fighting men, and eighty thousand camp followers, was encamped on the banks of the Sinde, under the immediate command of the Marquis of Hastings. Here the cholera exercised its most destructive power. It is uncertain whether it made its first approaches on the 6th, 7th, or 8th of the month. After creeping about, however, in its wonted insidious manner for several days among the camp followers, it seemed all at once to have gained vigour, and burst forth with irresistible violence in every direction, extending through the whole camp before the 14th of the month. Old and young, European and native, fighting men and camp followers, were, alike subject to its attacks, and all equally sunk in a few hours under its pestilential influence. It was a common occurrence for sentries to be

suddenly seized at their posts, and having been carried in to have two or three successors before the two hours duty was performed. Many of the sick died before reaching the hospitals; and even their comrades, whilst bearing them from out-posts to medical aid, sunk themselves suddenly seized with the disorder. The mortality at length became so great that there was neither time nor hands to carry off the bodies, which were thrown into the neighbouring ravines, or hastily committed to the earth on the spots where they had expired, and even round the walls of the officers tents. In the five days included between the 15th and 20th of November, the number of deaths amounted to five thousand. The natives thinking their only safety lay in flight, deserted in great numbers; and the highways and fields for many miles round were strewn with the bodies of those who had left the camp with the disease upon them, and speedily sank under its exhausting influence. The camp being now cumbered with the sick, the Marquis of Hastings determined to seek a purer air for the recovery of his sick. Although every means was put in requisition for their removal, a part was necessarily left behind. "And as many who left the carts, pressed by the sudden calls of the disease, were unable to rise again, and hundreds dropped down during every subsequent day's advance, and covered the roads with dead and dying; the ground of encampment, and line of march, presented the appearance of a field of battle, and of the track of an army retreating under every circumstance of discomfiture and distress."* The exact mortality could not be ascertained, but it appears that of the fighting men seven hundred and sixty-four fell victims, and it was estimated that about eight thousand camp followers, or one-tenth of the whole, were cut off. On arriving at the high and dry banks of the Betwah at Erich, the army soon got rid of the pestilence, and met with returning health.

During December, the disease appears to have every where abated, and in January of 1818, it was nearly extinct. Towards the latter end of February it however again revived with great force, and displayed those remarkable characters which have since distinguished it. Our limits will not permit, nor indeed would it be altogether interesting, to follow minutely the history of the disease in its subsequent march; all that we shall attempt at present will be to indicate its general course, although we may hereafter have occasion to notice some of the particulars of its progress, when considering the manner in which it extended itself.



* Bengal Report, p. 12-15.

Tracing the disease south from the 'province of Bengal,' we find it prevailing at Ganjam in March, 1818, at Madras in October, and at Trincomalee, in the Isle of Ceylon, in December. It reached Palamcotta and Trivanderam, near the southernmost part of the Peninsula, in January of the following year, in November, Mauritius, and in January, 1820, the Isle of Bourbon.

Following next its eastern route, we find it to have appeared in Arracan in 1818; at Penang, Bankok, Acheem in Sumatra, and at Samarang in Java, in 1819; at Manilla, Canton, &c. in 1820; and in 1821, it entered Pekin, where it prevailed during that and the two following years. By the latter end of 1823, it had traversed the Molucca or Spice Islands, including the Isle of Timor, near to New Holland, where it appears to have attained its south-eastern limits.

In its extension to the westward, the pestilence reached the Island of Bombay in August, 1818. In June, 1821, it entered Muscat, and then ascended the Persian Gulf, visiting the sea-port towns on either side. Extending inland, it spread from Busheer, through Persia, and from Bassora through Asiatic Turkey. In its latter route it reached Bagdad in 1821, Mosul, Tauris, &c. in 1822, and before the autumn of 1823, it had extended to Antioch, Diarberk, Erzeroum, &c., threatening on the one hand to extend through Turkey into Europe, and on the other through Arabia into Egypt; it suddenly however stopped in its course, and at that time proceeded no further in those directions.

In its progress through Persia, the first place of note that suffered was Shiraz, where it broke out about the middle of September, 1821. Passing by Ispahan, the disease next appeared at Yezd, but in October it broke out in the former city, where its ravages were soon arrested by the cold season. The following spring, however, it revived with renewed force, and by the close of 1822, almost every place of note in Persia had been traversed by the pestilence, and during the following year the few places that had hitherto escaped were visited. In August, 1823, the province of Shirvan was invaded, and after traversing Baku and other ports on the western border of the Caspian sea, it reached in September, Astracan, near the mouth of the Volga, and threatened Europe also in this direction; but after prevailing until the rigour of winter, it here likewise died away, and relieved Europe for the time from the impending danger.

We have but little knowledge of the history of the pestilence during the succeeding six years. It is known to have reappeared in different parts of Persia for several years in succession, as was usually the case where it had once prevailed; and it is also said to have ravaged for some

years the interior of China, and to have passed to the north of the great wall and desolated several places in Mongolia, by 1827.

In the summer of 1829, the pestilence however appears all at once to have gained renewed force, prevailing with great violence in several parts of eastern Persia, more especially in the province of Khorazan, and in various districts of Bucharia, particularly in Chirza, a city in the province of Kharazm,* situated on the Jihon, a stream which falls from the south into the sea of Aral, and where some of the Bucharian caravans assemble previous to crossing the Great Steppes of the Kirghis-Kaisaks. In August the disease reached Orenburg, the capital of the province of the same name, situated on the Tartar frontiers, four hundred miles north of the Caspian. From the official reports it appears that the first well-ascertained case of cholera at Orenburg, occurred on the 26th of August; a week afterwards a woman died suddenly, it was supposed from the same disease, and on the 8th of September, a joiner died after twelve hours illness. This last was unquestionably a case of cholera. On the 9th, two more cases occurred, on the 10th, two more, and after this it became rapidly prevalent. By the 20th of November it had entirely ceased. Out of a population of eleven thousand, eleven hundred were affected, of whom only two hundred died. No cases appear to have occurred in any other part of the Orenburg government until the 23d of September, when it broke out at the fortress of Raskopna, sixty miles west of Orenburg. On the 30th, cases occurred at Berdsk, a small station, twelve miles north of Orenburg, and by the middle of November, it had spread over a district of country of about two hundred miles square.* From this period the disease abated, and by the latter part of February, 1830, was entirely extinct in the Russian dominions.

The following summer, however, it appeared in a different quarter of the empire: viz. on the Persian frontier of Georgia. It has been ascertained that the disease prevailed in June in various places in the Persian province of Ghilan, and among others at Reschd, a sea-port town on the southern shores of the Caspian. From this it extended itself northward, along the western border of the Caspian, to Baku, another port, two hundred miles from Reschd, which it reached early in July, and north-westerly along the river Kur to Tiflis, the capital of Georgia, four hundred miles from Reschd, where it arrived on the 27th of July. In this latter city it attacked in ten days five hundred and seventy-nine persons, of whom two-

* *Die Asiatische Cholera in Russland, &c. Von Dr. J. R. Lichtenstadt. Berlin, 1831. pp. 218. 8vo.*

hundred and thirty-seven perished. From Baku the disease proceeded along the Caspian, attacking various ports and adjacent towns, and on the 19th of July reached Astrachan, a town situated on an island in the principal mouth of the Volga, about thirty miles from the northern shore of the Caspian, and three hundred and fifty from Baku. Here in ten days twelve hundred and twenty-nine persons were seized, of whom four hundred and thirty-three died. From Astrachan it is represented as having spread along the Volga, reaching Taritzin, two hundred and twenty miles above Astrachan, by the 4th of August, and Saratov, two hundred miles further north on the 6th of the same month. Spreading west between Taritzin and Saratov, it invaded the country of the Don Kossacks, and extended to the government of Kiev, five hundred miles west of the Volga. In its progress north it spread across the country to Perza, one hundred and forty miles from Saratov, where it arrived on the 17th of August; on the 27th, it appeared at Samarov, a town on the Volga, two hundred miles north-east of Saratov; and by the latter end of the month it reached Nischnei-Novogorod. On the 9th of September it broke out at Kasan, two hundred miles *down* the Volga, and east of Nischnei-Novogorod, and about the same time at Kostroma, one hundred and fifty miles *up* the river, and north-west of Nischnei-Novogorod; about the middle of September it entered Moscow, two hundred and sixty miles from and a little to the south of Nischnei-Novogorod, and about the same time reached Twer and Vologda, not far from the sources of the Volga, thus traversing a distance from the Caspian of at least fifteen hundred miles in three months and a half.

Spreading to the south and south-west the following spring, it reached Warsaw about the middle of April, 1831, and Riga, Polangen, and Dantzic, ports on the Baltic, in May. By the middle of June it had spread north to St. Petersburg, and shortly afterwards broke out at Archangel, on the Dwina, near the White Sea. By the last of August it had spread south to Berlin, in the following month it entered Vienna, and on the 11th of October it broke out at Hamburgh. In October it appeared at Sunderland, on the eastern shores of England, and up to November 28th, two hundred and ninety-four cases had occurred, of which eighty-six had been fatal, and thirty-two remained under treatment.

Egypt, which in 1823, like Europe, was suddenly preserved from the pestilence that was advancing towards it, was not destined to enjoy a continued immunity. The renewed activity which the cholera acquired in 1829, enabled it to continue its south-eastern progress, and at the present period it is committing the most extensive ravages in

various parts of Arabia and Egypt. It broke out at Mecca about the commencement of May, 1831, at the period when the pilgrims from every part of the empire were collected there to visit the holy places.*

The hasty sketch we have thus given of the geographical progress of cholera up to the present time, will enable our readers to perceive the extraordinary uniformity with which that pestilence has stalked from district to district and from kingdom to kingdom; a uniformity so great, as almost to permit the period of its arrival and the places which would be first attacked in a country, to be predicted.

Though on a great scale, however, travelling with remarkable regularity, the disease did not proceed in all directions without distinction or apparent choice, but exhibited extraordinary eccentricity at particular stages of its progress. It often seemed to affect certain lines, and to fix itself in particular divisions of country, sometimes appearing capriciously enough where it was not apprehended or expected, and in other instances following a path the direction of which could be traced with considerable accuracy. Sometimes it would "take a complete circle round a village, and leaving it untouched, pass on as it were, wholly to depart from the district. Then, after a lapse of weeks, or even months, it would suddenly return, and scarcely reappearing in the parts which had already undergone its ravages, would nearly depopulate the spot that had so lately congratulated itself on its escape. Sometimes, after running a long course on one side of the Ganges, it would, as if arrested by some unknown agent, stop at once, and taking a rapid sweep across the river, lay all waste on the opposite bank."† This description of the peculiarities of the disease in India, is applicable to it in every part of its subsequent progress.

It was not uncommon for the disease to be confined to particular portions of barracks or camps, or even to one side of a street; or for one or two tents in an encampment to be entirely exempt. In 1819, the disease commenced in the eastern wing of the barracks of the king's fourteenth regiment, and extended in a westerly direction, but suddenly stopped at the ninth company; the light infantry escaped with one or two slight cases only.‡ It is stated in the Bombay report that two cavalry regiments in a camp were altogether exempt from the disease, while all the other regiments were attacked.

It is not the least remarkable anomaly presented by this strange pestilence; that after pursuing its rapid progress to the very confines

* Letter from the French consul general in Egypt. *Gazette Médicale*, Sept. 17, 1831.

† *Bombay Report*.

‡ *Bengal Report*, p. 113.

of Egypt and of Russia, it should all at once lose its power of extension to those countries, and although raging on their very borders, not pass them until seven or eight years afterwards.

At times, it seemed to avoid high and mountainous tracts, whilst at others they enjoyed no immunity from its attacks. Thus it wholly avoided Kumaon, the hilly districts north of Hurdwar, and the elevated stony belt which girts in the Rajpootana states to the north-west, but it subsequently passed the lofty range of mountains guarding Napaul, to the east, and in the government of Orenburg, it attacked villages fourteen hundred feet above the surrounding plain. Some cases occurred in a detachment of the seventh native infantry, on duty in the garrison of Jaragurh, a thousand feet above the plain; while the inhabitants of the town of Ajmeer, on the declivity, and at the base of the hill escaped.* It always exhibited, however, a marked partiality for low, damp places, with crowded populations, and there constantly exhibited its most destructive powers. Thus Jessore, where the disease first prevailed with the greatest violence, is a crowded, dirty, ill-ventilated place, surrounded by a thick jungle, and exposed, during the rains, to the effluvia of an immense quantity of stagnant water. The district of which it is the capital, in its southern quarter, is composed of the Sunderbunds, a name given to numerous, low, marshy islands, contained in the Delta of the Ganges, and formed by the different channels through which that river travels to the ocean. The Sunderbunds are overgrown with wood, and inhabited only by tigers, reptiles, and such other denizens of the wilderness.†

The native town of Calcutta, in which the disease broke out, contains, in connexion with the suburbs, at least five hundred thousand inhabitants.

"It is chiefly composed," says Mr. Kennedy, "of miserable lanes, narrow, dirty, and unpaved; and the majority of the dwellings are low huts, with side-walls built of mud, mats, and bamboos, and covered with small tiles. Amongst the swarming population of these filthy receptacles, in which all descriptions of disgusting animal and vegetable odours abound, the distemper ran a long and wide career of destruction. Barely existing on a meagre diet of bad rice, the poor workmen, who had been abroad all day pursuing their laborious avocations in the sun, returned to their hovels in the most fitting state of body to contract the disease. Exhausted by the heat and fatigue, and confined during the night with their families, often six or eight in number, in a small space to which fresh air was a stranger, they were attacked by cholera in hundreds; and a frightful proportion of those attacked were swept away in the lapse of a few hours. This was more especially the case in the lowest part of the town and

* Bengal Report, p. 302.

† Kennedy, p. 20.

suburbs, and in the adjacent villages of Kidderpore, Manicktolla, Entally, Chitpore, Scaldah, &c. The condition, indeed, of the inhabitants of the latter places, is hardly to be imagined. These villages are made up of mud or straw huts, which are individually from six to twelve feet square, and so huddled together, that there is scarcely room to pass between them. In each of these unhealthy habitations a whole family resides, and, not unfrequently, cows and other domestic animals are added to the proper inmates. These dependencies, moreover, are every where intersected by pools, broad ditches, and channels, which, in the rainy season, become the reservoirs of foul water and corrupt weeds." p. 23, 4.

Every where indeed the disease not only showed a partiality for towns of this description, but it often was restricted to those portions of cities which were dirty and crowded. The Banians, or merchants of the town of Guntoor, whose dwellings occupy a wide dry street, almost entirely escaped the disease, while the Brahmins, who inhabit a close damp alley, suffered in as great a proportion as any other class of people.* Argrah, an airy, open, clean town, was comparatively healthy, whilst Multra, a filthy place, with crowded bazars, was severely scourged.† In Tripoli, a very clean and well ventilated town in Syria, with a population of upwards of fifteen thousand, only thirty-one were attacked, of whom five died, and the disease prevailed for only a few days; whilst at Antioch and Gesra, low and badly aired towns, it continued for a month and committed frightful ravages. Innumerable other similar cases might be adduced, were it necessary, but we will not fatigue the patience of our readers by detailing them.

Filth and deficiency of ventilation are incontestibly among the circumstances which most favour the ravages of this disease. In addition we may notice as the most common predisposing or exciting causes of the pestilence, the immoderate use of intoxicating liquors or excesses of eating of any kind, especially of sour and unripe fruits, low living and unwholesome diet, cold drinks when the body is overheated, fatigue, exposure to cold and the sudden suppression of the cutaneous exhalation, sleeping on the ground or in low ill-ventilated apartments, or in the open air, depressing passions, fear of the disease, &c.

We have seen that exposure to atmospheric vicissitudes and fatigue were the exciting causes of the disease, when it occurred in the detachment under the command of Colonel Pearse, also in that of Colonel Cockerel, and that it likewise produced the cholera at Hundwar. Abundant proof can be furnished that these same causes and those we have just indicated are active at the present mo-

ment, when the disease has assumed an epidemic character. Mr. Taylor in his report, states that at Bombay the disease was nearly restricted to that class of the population which was most exposed to the severest labour and privation.* In Mauritius, according to Mr. Corbin, by far the greater proportion of the seizures took place in the laborious classes of the population.†

“Of all the circumstances,” says Mr. Kennedy, “predisposing to an attack of cholera, fatigue consequent to travelling, or to hard work in the open air, was the most powerful. Accordingly we find that troops upon the line of march, and people whose occupations exposed them to the weather—s boatmen, fishermen, husbandmen, gardeners, grass-cutters, washermen, paankeen-bearers—were extremely subject to the disease.” p. 223.

“During the early progress of the cholera, large bodies of troops, though in good health previously, seldom performed a march in Hindostan without being attacked.” p. 248.

MM. E. Le Gallois and E. Brière de Boismont state that the individuals attacked by this pestilence at Warsaw, generally belonged to the lowest class.‡ Their condition was miserable, their wants extreme. Their nourishment was bad and very indigestible, their houses filthy and ill-ventilated. Drunkards, debauchees, all those who committed excesses, those exhausted by diseases, the weak and aged, succumbed in a short time. Three drunkards after an orgie perished in the space of four hours, and a drunken servant in the hotel where MM. G. and B. lodged was found dead in his bed.§

Dr. Gibbs says that at St. Petersburg the disease could in almost all cases be traced to eating flatulent and crude vegetables, as cucumbers, melons, radishes, &c. of which the Russians are so fond; the use of ardent spirits, and afterwards drinking iced water, or quass, their common beverage, well-iced, and this during perspiration.||

The rapidity with which it often destroyed its victims is one of the remarkable characters of cholera, in some cases extinguishing life with almost the rapidity of lightning. At Bellamy, in India, a tailor attacked with the disease whilst engaged at his trade, is said to have instantly expired with his work in his hands, and in the very attitude in which he was sitting. A merchant, whilst in the act of closing a bargain for some tubs of sugar-candy, was suddenly seized, vomited twice, and expired. At Mecca the invasion of the disease was almost instantaneous. Individuals in perfect health were stricken to the earth, vomited, became cold, and died on the spot.¶

* Kennedy, p. 73.

† Med. Chir. Trans. Vol. XI. p. 148.

‡ It was the same in Moscow, according to Dr. Jaehnichen.

§ Gaz. Med. July 8, 1831.

|| Ed. Med. and Surg. Journ. April, 1831.

¶ Letter from the French Consul General in Egypt. l. c.

- It does not, however, usually terminate fatally in less than from six to twenty hours, and not unfrequently it runs a longer course.

The estimates which have been formed of the total mortality that has attended this scourge, rest upon data too vague to permit us to place any great reliance upon them; yet the supposition that it has destroyed upwards of fifty millions of human beings within the last fifteen years, awful as such a mortality certainly is, seems not to be altogether incredible, when we consider the great fatality that has sometimes attended it. We have seen that in a few weeks it destroyed at Jessore six thousand persons; at Allahabad it numbered ten thousand victims; in Mysore the same number; at Benares fifteen hundred perished in two months; and in the district of Gorreapcore thirty thousand died in half that time. In Java it is said to have destroyed one hundred and two thousand; in Bangkok, Isle of Siam, forty thousand; in Pekin the mortality was so great in 1822 that the government was compelled to bury the dead. At Bassora it numbered eighteen thousand victims, of whom fourteen thousand died in two weeks, out of a population of sixty thousand; in Muscat, and its environs, it destroyed sixty thousand; at Mecca, in 1831, twenty thousand pilgrims perished.

We have not sufficient data to enable us to ascertain its comparative mortality; indeed it has exhibited great variety in this point; at times its fatality being extreme, at others scarcely greater than ordinary fevers. Thus, the family of a wealthy Nair, in Travancore, consisting of nineteen persons, were all, save one, cut off by it in a few hours. Another family of five all died. Mr. Searle stated that at Mantoddy of twenty-eight villagers attacked with it twenty-six died.* We have seen that it decimated the Marquis of Hastings' army. At Mecca, of fifty thousand pilgrims assembled there last May, twenty thousand perished. In the city and suburbs of Orenburg, containing eleven thousand inhabitants, eleven hundred were attacked, of whom two hundred died. At Moscow the mortality varied greatly at different periods, being at first as high as nine-tenths of the cases, afterwards it gradually sunk to a half, and at last to a third. At Vienna, where the disease appeared in September, out of a population of three hundred and twenty thousand only one thousand three hundred and sixty had died up to the 24th of October. In Berlin and Hamburg the proportional mortality is said to have been less.

The rate of travel of the disease over the countries it has visited has of been every where the same, but has been influenced by circumstances not as yet ascertained. Thus it was from the 20th

* Madras Report.

of March to the 14th of November, in its passage from Gánjam, latitude $19^{\circ} 20'$, to Cuddalore, latitude 11° , travelling the distance at the rate of rather more than two miles a day. It traversed the peninsula of India east to west, from the Bay of Bengal to the Bay of Cambay, a distance of thirteen hundred miles, in one year, being at the rate of nearly four miles a day. From the south of the Caspian, along the Volga to Twer, a distance of upwards of fifteen hundred miles, it passed in two months and a half, or at the rate of more than fourteen miles a day.

Traversing, as we have seen that the disease has done, through various countries between the latitudes of 20° south and 65° north of the equator, and in longitudes through upwards of 100° , it must necessarily have encountered every variety of climate, without its powers of spreading being destroyed. Nevertheless, cold seems always to have impeded and generally to have arrested its march. The only striking exception to this rule is its prevalence in Russia during the depth of winter, and this exception, according to Lichtenstädt, is more apparent than real, at least in Moscow, since he says it attacked those only who lived in hot stove rooms, and enveloped in furs, were always in an atmosphere of summer temperature.

Another fact in the history of this disease must not be overlooked; it is the shortness of its visitations. When appearing in a town or among a large assemblage of persons, it spread with extreme rapidity, and in general ran its course in the space of a few weeks, and then disappeared. It did not, however, entirely die away. Once in possession of a soil, it generally took root there, and only waited for some favourable opportunity to germinate afresh. Thus Calcutta has suffered from it every summer since its first appearance in 1817; Bombay has been invaded by it twelve times; and at the moment we are writing this, we learn by an arrival from India, that it had broke out on the 5th of June last at Benares, a large town on the Ganges, and has been raging since then with extreme violence.

Cholera, we have seen, has always been endemic in India, and suddenly acquired, in 1817, an epidemic character. The causes which invested it with this character seem to be still a mystery. Indeed, the origin of most general pestilences is as yet an unsolved problem in medical science. They have usually, however, been preceded by some unusual atmospheric phenomena, and the one under consideration forms no exception to such a rule. It is indeed said by Dr. JOHNSON, in his work on the diseases of India,* that the cholera com-

mened without any previous peculiarities in the weather, and this statement has been repeated by many subsequent writers. Dr. HAWKINS gives it as a generally admitted fact. This is, nevertheless, the very opposite to the truth. Dr. Jameson and Mr. Annesley, both of whom had the most ample means of obtaining information, assert that the seasons preceding the appearance of the epidemic were unusually disturbed, and remarkable for atmospheric vicissitudes. Mr. SCOTT, in his Madras report, also speaks of the marked intemperature of the seasons preceding and accompanying the appearance of the disease. It appears from Dr. Jameson's Bengal report, that for some years before the epidemic cholera made its appearance, there had been excessive heavy rains, great droughts, storms, and earthquakes. During the rainy season of 1815, the fall of rain was excessive; the Ganges, the Soane, and Coossee rivers burst their boundaries, producing great destruction. The cold season that followed was damp, unpleasant, and exceedingly foggy. On the other hand, the hot season of 1816 was distinguished for drought and intense heat, which was tempered with but few breezes and little or no rain. On the 15th of April a shock of an earthquake was felt at Calcutta. Towards the end of May, the thermometer had risen to the unusual height of 98° in the shade; and under the effects of this oppressive heat many persons, European and native, fell down dead in the streets. This dreadful sultry weather continued, until interrupted on the 14th of June by the commencement of the rains. During the remainder of June and during July there were moderate rains, and a second shock of an earthquake was felt in the latter month. In August the showers became rare, and the days and nights oppressively hot; in Calcutta and in the western part of the province, the drought that succeeded was so uncommon as to dry up the rivers. On the 8th of September this drought was suddenly succeeded by a deluge of rain which continued throughout the month, and occasioned a deeper and more general inundation than had happened at any period within the recollection of the oldest inhabitants.

The morbid effects of this anomalous weather soon showed itself, and instead of the inflammatory affections which usually presented themselves, the only diseases met with were low fevers, and other disorders of the typhoid character; among others, the "malignant sore throat," hitherto unknown in that portion of the globe, except by name, made its appearance.

Bilious remittent fever soon became prevalent, and before the end

of August was raging epidemically in almost every town, between Patna and Saharempore, and continued to prevail until the cold weather in December. The disease attacked equally Europeans and natives, and the mortality was very great. Of numerous native villages the whole population was ill at one and the same time; the banks of the river were at all times covered with the dead and dying. The eighty-seventh and sixty-sixth regiments at Cawnpore lost nearly four hundred men; the former corps is said to have had five hundred and nineteen in hospital at once, and to have buried twenty-one persons, (including women and children,) in one day. In Upper Hindostan the horned cattle were very sickly, and their bodies in vast numbers were to be seen strewed in the pastures.

The ensuing cold season was raw, damp, and unpleasant.

The deviations from the ordinary course of the season, during 1817, were as marked as those of the preceding year. February, instead of being dry and cold, was very rainy, as was also March. On the 21st of the latter month, a violent thunderstorm was experienced followed by hail and torrents of rain, which destroyed the blossoms of all the mangoe and other trees then in bloom, and severely injured the spring crops. The thermometer ranged from 68 to 82°. Among the Europeans chronic dysentery and rheumatism were the prevailing complaints. On the 30th of the month a soldier of the fifty-ninth regiment at Fort William, Calcutta, was attacked with cholera, and died in thirty-six hours. No other case at that time occurred, and there was nothing observed remarkable in the weather, or the health of the population, until the 25th of May, when the rains commenced, which was fifteen or twenty days earlier than usual. In every part of the Gangetic Delta the descent of heavy rain was long and uninterrupted, and nearly the whole country, especially in the lower division of the province of Bengal, was one sheet of water before the middle of August. Lakes and tanks that in former seasons had remained nearly dry for a considerable time were now filled to overflowing, and remained so for a comparatively long period. The measure of the rain was estimated at one hundred and twenty inches, one-third more than the usual quantity.*

Cholera, which has already been stated to be endemical in Bengal, and to prevail more or less at certain seasons, was of more common occurrence during the first six months of 1817, than in former years. It prevailed among the natives in an unusual degree in May and June in several parts of Nuddea and Momensing, and in other and distant

parts of Bengal, between which there had been no immediate inter-communication. By the middle of August it had assumed an epidemic character, and before the last of September it was prevailing throughout the whole province of Bengal. During the cool weather of November and December the disease gradually died away, and became nearly extinct in January.

The succeeding year, (1818,) was similar to its predecessor. There were excessively heavy falls of rain, especially in the upper provinces, and sudden vicissitudes. On the 19th of February, the wind settled to the south and the hot season set in; on the 25th there was a north-wester, and on the 27th and 28th much rain. Immediately on the occurrence of this sudden change in the weather, the cholera revived and raged with indiscriminate violence among the natives; and at the end of the following July, it equally affected Europeans.

It has been supposed by some persons, that as it was during the wet season of the year, that the disease had been endemic; and as since becoming epidemic, its appearance has been influenced by the weather—breaking out in spring, abating in winter, and becoming aggravated by atmospheric vicissitudes—that these causes are sufficient to explain its occurrence, wherever it has prevailed. That the excessive rains and atmospheric variations we have noticed, were circumstances exceedingly favourable to the occurrence of the disease, is extremely probable; but whether they were sufficient to endow the disease with its epidemic character, may certainly be questioned.

The regular progress of the disease—its prevalence in every climate from 20° south latitude, to 65° north, alike in the tropical regions of India and the frozen regions of the White Sea—its appearance under every possible variety of season, heat, cold, dryness, and moisture; raging in Benares, Bundlekund, Oude, and the southern districts of the Doab during the dry months of the hot weather, whilst it did not appear in Delhi, in Meerut, or in Jeypore and the tracts in their vicinity, until the rains had set in, and the air was loaded with moisture; attacking, of five camps, the centre division in the cold season, the Nagpore and Saugur division in the height of the hot winds, and the Rajpootana and Kurnaul divisions whilst it poured down rain—and its occurrence equally in the low and marshy Delta of the Ganges, and on the dry and elevated plain, of Orenburg, show that it cannot depend *solely* either upon heat or cold, dryness or moisture. The fact that atmospheric vicissitudes are among the common *exciting* causes of the disease, has no

doubt led to the error of ascribing its essential cause to sensible changes in the weather, but as these have always occurred without previously inducing the disease or even doing so at the present time,* it is evident that we must look to something else as the means by which the disease is propagated.

This, according to a pretty numerous party, especially in England, is to be found in the existence of a specific contagion, generated in 1817. Those who are of opinion that the disease is propagated in this way, have offered various circumstances in support of their belief. They assert that the disease has always followed the highways of human intercourse, the great roads and navigable rivers, that it follows the track of armies and caravans, and that its importation from one place to another could often be directly traced. That bodies of troops in motion have been attacked and have retained the disease, while it was unknown to the fixed inhabitants of the country through which they passed, and that when it is once established in a marching regiment, it continues its course in spite of change of position, food, and other circumstances. That the relations who have attended on persons ill of cholera, as well as the nurses appointed in military hospitals for that duty, and in general those whose employment has led them to be much with the sick, have been observed in very many instances to be attacked with the disease, during or shortly

* The Nagpore subsidiary force, whilst conducting the siege of Chandah, during which the troops were exposed to the great heats of the day under a range of stony hills, and often without shelter, to the dews of night, had not a case of the disease. On the 30th of May a detachment returned to Nagpore, where the disease was prevailing, and took possession of certain huts near the Sittabuldee hills, which they had formerly occupied. Though previously in good health, they had scarcely taken possession of their quarters when it appeared among them in a violent manner. The first day only one individual was affected; but on the 31st it appeared with great violence and fatality; on the 1st of June the attacks were very numerous; on the 2d it declined, and after the 10th rarely appeared. In a detachment of this force left at Hingumghat, fifty miles south of Nagpore, it appeared at the same time, and followed the same course. The left division of the army had been almost constantly moving from the beginning of March, and in the latter part of that month, and the first week in April, had undergone great privations and fatigue whilst conducting a heavy train of artillery, and a numerous convoy of carts, in the cold of the night, and great heats of the day, through a mountainous and difficult country. Yet they felt nothing of the epidemic until they, on the 9th and 10th of April, reached Jubbulpore, in which town it had been raging several weeks; from which period they became numerous affected. So many similar cases have occurred that they can hardly perhaps be ascribed to mere coincidence. *Bengal Report*, p. 89.

after their attendance. That the sick in hospitals labouring under other diseases, have likewise been observed to be attacked with cholera, especially those who lay near patients ill with that disease. Mr. Hawkins^a says, that in India “the disease was *probably* communicated from one person to another, and that in Europe it has *undeniably* proved so.” He further asserts, that insulation or separation from the sick, is almost universally found to preserve from the evil.†

This certainly presents a pretty strong *prima facie* case of contagion. But let us examine the alleged facts upon which these assertions have been based, and see whether they will bear investigation.

There appears always to have existed, among the inhabitants of every place, an unwillingness to believe that a pestilential disease could originate among themselves—such circumstance being considered as extremely disreputable, and hence attempts have always been made to trace its origin in, and importation from, some less favoured spot. Thus, in the case of yellow fever, for a long time the idea of its originating among ourselves was repelled with indignation, and its introduction attributed to importation from the West Indies. There appears, however, to have been no lack of this particular kind of amor patriæ in these latter islands; and their inhabitants have equally refused to admit its origin among themselves, and insist that it must have been imported from Africa. We know not what the poor African says on this subject, but have no doubt that its importation from some other place is equally satisfactory to him.

As regards cholera, the doctrine of importation was early resorted to to explain its appearance. Thus, it was at first said to have been imported into Calcutta and other places in Bengal from Jessore, until on investigation it was proved by the most conclusive testimony to have occurred nearly simultaneously in various parts of the province, between which there had been no immediate intercommunication. But let us examine into some of the special cases in which the importation, it is said, could be traced.

The disease was imported into Mauritius, say the contagionists, by the frigate *Topaze*, which sailed from Ceylon while the disease was raging there. The former island is distant upwards of two thousand miles from the latter, or from any place where cholera was prevailing at the time. On the passage seventeen cases of cholera appeared on board the *Topaze*. “The frigate,” says Mr. Kennedy, “arrived in the harbour of Port Louis, the 29th of October, 1819, and it was not until the 18th of November that the cholera began to

spread among the inhabitants. The people, therefore, were naturally led to suspect that the malignant form of the disease had been imported by the *Topaze*." The public opinion will hardly be admitted as proof in this case, especially as it is in direct variance with that of the medical officer. It appears, from the report of Dr. KINNIS,* that a case of cholera occurred on the 5th of September, and another the following day, whilst the *Topaze* did not arrive until the 29th. That the thirty patients sent from the ship to the hospital were cases of chronic dysentery, hepatitis, and general debility. He further states, both on the authority of the surgeon of the ship, and from personal observation, that not one of these patients laboured under symptoms of cholera at the time of disembarkation, and that not a soul on board the *Topaze*, which lay about a mile and a half from the shore, but constantly communicated with it, was attacked after her arrival. The disease, moreover, did not break out among the nurses or the other patients in the hospital where these men were lodged, but among the African slaves and convicts. It was not, of course, conveyed into the town by the patients. If the clothes of the crew were imbued with the infection, as the contagionists assert, they should show that the disease broke out among those who visited the vessel, and explain how, of a whole frigate's crew, but seventeen should be affected; yet should convey the infection to others. We are not informed when the frigate left Ceylon, at what period of the voyage the disease occurred, when it ceased on board; nor are we furnished with many other important particulars to establish contagion. For even admitting that the disease first appeared on the 18th of November, twenty-one days after the arrival of the *Topaze*, it is far from following, that the disease was imported by that frigate; for it is pretty well proved, that the period at which the disease shows itself, after being exposed to the supposed virus, rarely, if ever, exceeds four or five days, and it is not contended, we believe, that the supposed infection can remain for a much longer time in garments.

It must then be admitted, that at least *no proof* of the disease being imported by the *Topaze* has as yet been adduced.

The story of the introduction of cholera into Astrachan is so vague that little can be said in relation to it. It is stated in the report of Dr. Solomov, that the disease first appeared on the frontiers of the Astrachan government on the 3d of July, on board of a ship of war which had arrived from Baku, (three hundred and fifty miles down the Caspian,) and lay *sixty miles from Astrachan*. Till the 20th of

* Hawkins, p. 264.

the month the disease was confined within the Sedlitooski lazaretto, whither the vessel with the sick had been brought. But on that day four people were taken ill in the city, near the river Kutum, and from this point the disease *imperceptibly* spread over the whole town.* Now there is certainly nothing, so far, to prove that the disease had been imported, and here the relation stops, without even the attempt to show that the slightest intercourse took place between the individuals simultaneously attacked and the sick at the lazaretto; indeed we have no information furnished us of their having ever been nearer than within sixty miles of each other.

After a careful investigation of the supposed introduction of the disease into Orenburg by the caravans which arrive from Central Asia about midsummer, it was found impossible to attach any plausibility to that notion. The last caravan that arrived at Orenburg, reached that place on the 22d of July, thirty-five days before the first case of cholera occurred there; the individuals composing it were all in good health, and in crossing the steppes, which is accomplished in from thirty-three to ninety days, they lost only one companion, whose disease could not be ascertained, but who died after being twenty days ill, and therefore it could not have been of cholera. Now it is entirely admitted by the contagionists, that the period at which the disease occurs after exposure rarely exceeds three days,† and that at most it does not exceed a week. It is consequently entirely clear that the disease could not have been introduced by the persons belonging to the caravan. It is scarcely less certain that it could not have been introduced by the goods conveyed by them; since at every resting place it is the practice of the merchants to unpack their merchandise, so that they must have been freely exposed to the fomites had there been any; yet none of them were taken ill. Besides, the Bucharian merchants and their attendants, laughing at the suspicions of the physicians, exposed themselves in every possible way to the exhalations from their packages. Neither could it be discovered that any person in Orenburg was attacked by the cholera, who had purchased goods of a suspected nature brought by the caravan. When to these facts it is added that the cholera did not appear at Orsk or Troitsk, two other frontier towns, where the eastern caravans also arrive during summer, it is evident that importation in this manner is out of the question.‡

The introduction of the cholera at Orenburg was ascribed by some

* Lichtenstadt.

† Kennedy, p. 215, 232.

‡ Edinburgh Medical and Surgical Journal, xxxvi. Lichtenstadt.

of the inhabitants to another source. They attributed it to the Kirghis-Kaisaks, from whom the government of Orenburg is separated merely by the river Oural. The following remarks of Dr. Sakolov on this subject appear conclusive:—

“Finally,” says he, “the introduction of cholera into Orenburg has been ascribed to our neighbours of the Steppes, the Kirghis. Their intercourse with Taschkent, Bucharia and Chiwa is well known; so that if the disease was introduced into any of these districts from Caubul or Khorasan, it must have been communicated to the Kirghis. Their own accounts, too, though discordant in many respects, supply clear, convincing proof that cholera has shown itself in some of their hordes on the Ilek and Emba, (the former of which streams joins the Oural from the south-west, a little below Orenburg, while the latter river runs parallel to the Oural at a distance of about eighty miles, and flows like it into the Caspian.) But their constant distrust of us, and their suspicious closeness are a great obstacle to our procuring distinct evidence of the form and extent in which the disease prevailed in this wandering semi-barbarous race.

“Besides, it is their constant custom to abandon all those to their fate who are sick or suspected to be ill, (for example, of small-pox, measles, or inflammatory fever,) and to wander to a distance from any place where such diseases have shown themselves,—which is in fact the most effectual means they could take to check their dissemination, and serves equally to lessen the number of victims, and to withdraw them from observation. Along our whole confines the Kirghis are constantly employed bartering goods with us during the summer and harvest, their principal articles of commerce being sheep, camblet, felt, and skins. But if the Chiwa and Bucharian caravans could not have introduced cholera into Orenburg, because it was actually never introduced into Orsk and Troitsk, how was it possible for the Kirghis to introduce it into Orenburg, without also introducing it into the numerous stations on the frontiers with which they maintain an equally constant intercourse?” p. 123.

Thus the notion that the disease was introduced into Orenburg by importation, appears utterly improbable; at least the strictest investigation has failed in discovering any thing that could favour such an opinion.

The disease, it has been said, was introduced into Riga in a package of hemp, and it is asserted that fifteen labourers who opened it were attacked with the complaint; others attribute the introduction to the barques.

The statement of fifteen labourers being attacked at Riga, while opening a pack of hemp, the British consul asserts to be a notorious falsehood. As to its introduction by the barques, let us hear what he says on that subject.

“It is impossible” he observes “to trace the origin of the disease to the Barques; indeed it had not manifested itself at the place whence they come till after it had broken out here. The nearest point infected was Schowlen (at a distance of 200 wersts,) and it appeared simultaneously in three different places at Riga,

without touching the interjacent country. The first cases were two stone-masons, working in the Petersburg suburbs, a person in the citadel, and a lady resident in the town. None of these persons had had the slightest communication with the crews of barques, or other strangers, and the quarter inhabited by people of that description was later attacked, though it has ultimately suffered most."

The cholera was imported into Dantzic, say the contagionists, by a vessel from Riga, the captain of which ship died the day of his arrival; afterwards the cholera gradually extended itself first to the port, next to the suburbs, and subsequently to the city; and further to prove its contagious nature, it is added, that the neighbouring places have been preserved by a cordon sanitaire. This story, if true, would at once determine the question of contagion; and it appeared so important in relation to the settlement of that point, that Dr. DALMAS, a member of the medical commission, sent by the French government to Warsaw, determined to go himself to Riga to investigate the subject. In a letter to Dr. BLANDIN, published in the *Journal Universel et Hebdomadaire de Médecine et de Chirurgie Pratiques*, &c. for November last, Dr. Dalmas states, as the result of his investigations:—

"1st. That the cholera did not exist at Riga at the period of the sailing of the vessels accused of conveying the disease. 2d. That the cholera did not appear on board any of them during the voyage. 3d. That the cholera appeared at Dantzic before their arrival, and that it broke out in the town before it appeared in the port; and lastly, the cordon sanitaire did not protect the neighbouring places.

"It would occupy too much space," he adds, "to detail all the proofs of what I advance, but I will indicate them to you.

"It results from authentic documents, of which I have certified copies, that it was not until the 30th of May, that there arrived in the roads, loaded with articles for the Russian army, the first four ships, viz. the Minna, Captain Brandt; Joh. Maria, Captain Stooek; Stoffmung, Captain Saag; Unga Neptunus, Captain Lilya. The two first were signalled the 30th of May, at 5 A. M. five leagues to the east. The captains were furnished with regular, clean bills of health. Finally the healthy state of their crews was ascertained in the most satisfactory manner by Dr. Mathy. On the other hand, after the most scrupulous researches, it has been proved that no other vessel or boat from Russian ports had arrived any where within the circle of Dantzic. In admitting, against all justice, that the bills of health and the report of the physician who visited these vessels are not to be depended on; as these four vessels are the first that appeared in the roads, it is impossible that the disease could have been imported before the 30th of May, the day on which it is true that Capt. Brandt died, after a few hours illness probably from cholera, but which is not perfectly certain. But it is proved, officially avowed, demonstrated, that three cases of the disease occurred on the 27th of the month, on shore. These were three workmen on board a boat, engaged in cleaning out the port. Sent to their village, two of them died, one on the 25th, the other on the 31st of May; the third recovered. Their name, that of their village, and the other particulars are known.

"It is then certain that the cholera appeared on shore before the arrival of the first vessels. The cases just noticed are alone sufficient to prove it; but I go further, and say that the disease occurred previous to the 27th, and in the city moreover. To prove this, I have no official documents; but physicians, respectable from their learning, and entertaining different opinions respecting contagion, are unanimous on this point, that several days before the 27th, persons were attacked with cholera, in Dantzic. On the 21st, Dr. Baum received and prescribed in the hospital for a patient, who soon died. I have read the manuscript account of the case and post mortem examination; it was evidently a case of cholera. Drs. Geisler and Gnascheke have met with similar cases; finally, I have been positively assured, that in the early part of the week, ending the 28th, there were many cases of death after short illnesses, from causes respecting which the physicians were not at first agreed, when the cases of the 27th settled their opinions. The cholera then appeared first in the city.

"Another fact, still further disproving all idea of contagion from the goods imported from Russia is, that not one of the labourers employed in discharging one hundred and ten ships, which subsequently arrived, were affected.

"Finally, it is false that the cordon prevented the propagation of the disease to the environs; for it appeared many days before the cordon was removed, at Esling, Marienburg, Stutgard, and at Derschaw."

The importation then, by sea, adds Dr. Dalmas, is entirely fabulous.

MM. BRIERE DE BOISMONT and LEGALLOIS, were who sent to Russia by the Polish committee, give the following account of the first appearance of the cholera in Poland.

The disease, say they, made its first appearance in Poland on the 10th of April, 1831. It particularly affected the soldiers fatigued by painful marches, prolonged bivouacs, who were exposed to the tempestuousness of the seasons, and observed no hygienic rules. Thus it selected for its attacks the regiments which were encamped between two mountains upon a swampy prairie, and the soldiers of which had little else for food than pork. The days preceding the appearance of the malady were warm, the thermometer being 19° and 20° Ream.; the nights on the contrary, were cold and moist. After the battle of the 10th, at Iganie,* which was long and bloody, the Poles, heated by a forced march, and the length of the action, greedily drank of the muddy water of this marsh, until they were gorged; and by the night of the 12th-13th, many of them had already expired.†

The reader may judge for himself how far importation is made out in this instance, and whether the appearance is not equally explicable by the theories presently to be discussed.

* It should be mentioned that cholera prevailed among the Russian troops.

† Gazette Med. July 8th.

It must not be concealed that there are several other instances of importation related by different writers. Thus it is stated in the Bombay reports, that a man who left Panwell whilst the disease was raging there, had arrived at Bombay and was soon after attacked by the disease and died, and that on the day following his wife and the wife of the man, who lived next door, and almost immediately afterwards two near neighbours were affected, all of whom fell victims. Several cases afterwards occurred in the lane where these people had lived, and afterwards cases occurred in *different parts* of the town. Several cases of a similar kind are related in the Russian official documents. Thus it is said that a vintner's servant was attacked in the fortress of Raziupna, the day of his return from Orenburg, and that four days afterwards several of the garrison were affected. It is also stated that the disease first appeared in the fortress of Ilets, soon after the arrival of a soldier and a soldier's wife, who were taken ill on their way from Orenburg, and died the day after their arrival at Ilets. Three days afterwards three individuals were attacked in the garrison with the disease, one of whom was the husband of the woman.

It is impossible for us, remote as we are from the scene of these alleged occurrences, and a few others of a similar character which might be adduced, to disprove or confirm their accuracy. We can only say that, with scarcely a single exception, they are related in so loose a way, and are so deficient in important details, that they can hardly be received as evidence, much less as proofs of contagion. Moreover, in opposition to these, the contagionists adduce many instances, where the first cases which have occurred in a town are known, and in which it is impossible to trace its derivation from any external source. Thus in Moscow, where the police is remarkable for their activity, Dr. Jaehnichen informs us that the most minute and exact researches most incontestibly prove that the disease was not imported into that city, but that it developed itself spontaneously. Dr. WALKER, a believer in the contagious nature of the disease, confirms this. He states that, "a strict investigation had been made into what were considered the first four cases occurring in Moscow, and that it proved that they had neither themselves been in any infected place, nor had communication with any one coming from such place."^{*}

It has been equally impossible to trace its introduction into Sunderland. Mr. PENNMAN, the surgeon to the Sunderland Infirmary, in his letter to the American consul, states, "we have no evidence of

^{*} Hawkins, p. 249.

its being imported, and the prevailing opinion is, that it is not infectious." Dr. Brown, in a letter to Drs. Johnson and Tweedie, makes the same statement.

Let us now examine some of the other arguments which have been adduced in evidence of the contagiousness of the disease.

The disease it is said has often appeared to progress by the great roads and channels of human intercourse. This may be true, but it has not always done so. Surgeon MITCHELL, in his report from Palamcottah, says, "as far as I can learn, the cholera appears to have made its approaches by neither of the great roads. Commencing its ravages here to the eastward, a little north of the fort, it spread pretty generally through the small, low, dirty houses in every direction. The hospital seems to have escaped, probably because the building stood upon high and open ground."

It appears also that we cannot always trust to the accounts of the limitation of the disease to the great thoroughfares.

Mr. Bell observes, "when travelling on circuit, I have found the disease prevailing in a district *before any report had been made of the fact, notwithstanding the most positive orders on the subject*; and I am persuaded that were any of the instances adduced in support of the statement under consideration, strictly inquired into, it would be found that the usual apathy of the natives of India had prevented their noticing the existence of the disease, until the fact was brought prominently forward by the presence of Europeans. It should also be borne in mind, that cholera asphyxia is not a new disease to these natives, but seems to be in many places almost endemical; whilst it is well known, that strangers, in such circumstances, become more obnoxious to the disease than the inhabitants of the country. Moreover, travellers have, superadded to the remote causes of the disease, fatigue and road discomforts, which are not trifling in a country where there are neither inns nor carriages." p. 89.

But even if it be a fact that the disease is principally restricted to the high roads and navigable rivers, it is there that men collect in the largest masses, that we find the most crowded and filthy dwellings and the most wretchedness, in short, the situations most favourable for its production and the description of persons among whom the disease has always selected its greatest number of victims.

Where the disease appeared to follow the track of the various caravans, there is no mention made of the distemper having existed in these travelling communities, and it is admitted that had it prevailed among them it could not have been concealed from the European consuls, and that, therefore, the coincidence of the eruption of the malady, and the arrival of the caravan, must be accounted for on the only hypothesis left, namely, that the cholera was propagated by the goods which were transported from infected places. Now, this as-

sumps as a fact what is still to be proved, namely, that the supposed infection can be conveyed in goods. We have seen that the Bucharian merchants and their servants exposed themselves freely to the exhalations from their goods with impunity, and that it was impossible to trace the disease to any one who purchased goods of them at Orenburg, and no evidence has been offered to prove that elsewhere those who purchased goods imported by caravans were the first to be attacked with the disease.

In the report of the extraordinary committee of physicians assembled at Moscow, it is stated that eighteen members of the provisional medical council are of opinion that the cholera cannot be communicated by means of goods and merchandise, and that only three are in favour of it, and that the opinion of the minority destroy themselves—offering many contradictions, and not corresponding to known facts. And they further state, that “convalescents have continued to wear clothes which they wore during the disease, even furs without being purified, and they have never had a relapse.”*

Dr. Albers, in his report to the Prussian government, says that it is completely made out by testimonies innumerable, “that the cholera is not communicated by articles of merchandise, or by any inanimate objects.”

Dr. Walker says that no cases have as yet come to his knowledge sufficient to prove the possibility of the disease being communicated by clothes or goods.

Finally, Dr. Smirnov informs us that the women who washed the clothes of the patients in the hospital at Orenburg, and who could hardly have escaped, were there any infection to be conveyed by such articles, were entirely exempt from the disease.†

If bodies of troops in motion have, as is asserted, been attacked with the disease whilst it was unknown to the fixed inhabitants of the country through which they passed, it seems not at all inexplicable, when we consider that they are exposed to the avowedly predisposing and exciting causes of the disease. But the following extract from Mr. Bell’s Journal will show that the assertion in question rests on no very solid foundation.

“In July, 1819, I marched,” says Mr. Bell, “from Madras, in medical charge of a large party of young officers who had just arrived in India, and who were on their way to join regiments in the interior of the country. There was also a detachment of sepoy, and the usual numerous attendants and camp followers of such a party in India. The cholera prevailed at Madras when we left it. Until the fifth day’s march, (fifty miles from Madras, no case of the disease occur-

*Hawkins, p. 284.

† Lichtenstadt.

red. On that day several of the party were attacked on the line of march, and during the next three stages we continued to have additional cases. Cholera prevailed in the country through which we were passing. In consultation with the commanding officer of the detachment, it was determined that we should endeavour to leave the disease behind us; and as we were informed that the country beyond the Ghauts was free of it, we marched without a halt until we reached the high table land of Mysore. The consequence was, that we left the disease at Vellore, eighty-seven miles from Madras, and we had none of it until we had marched seventy miles farther, (seven stages,) when we again found it at one of our appointed places of encampment. But our camp was, in consequence pushed on a few miles, and only one case, a fatal one, occurred in the detachment. The man was attacked on the line of march. We again left the disease, and were free from it during the next hundred and fifteen miles of travelling. We then had it during three stages and found many villages deserted. We once more left it, and reached our journey's end, two hundred and sixty miles farther, without again meeting it. Thus, in a journey of five hundred and sixty miles, this detachment was exposed to, and left the disease behind, three different times, and on none of those occasions did a single case occur beyond the tainted spot. p. 90, 91.

The evidence adduced in favour of the infectious or contagious quality of cholera, as it respects the intercourse between individuals, is thus summed up by Mr. Scott in his Madras report, p. xlix.

"The relations who have attended on people ill of cholera, as well as the nurses appointed in military corps for that duty, and, in general, those whose employment has led them to be much with the sick, have been observed in very many instances, to be attacked with cholera, during or shortly after their attendance.

"The sick in hospital, labouring under other diseases, have likewise been observed to be attacked with cholera, especially those who lay near the patients ill with that disease. Sometimes whole families have been swept off successively. Servants have often been observed to sicken after attending their masters."

The whole current of medical testimony, however, goes to prove that the disease was not propagated from patients to their medical attendants, or to those who were previously in hospital, and labouring under other diseases.

It would be indeed strange if physicians and nurses, who from the extreme fatigue and loss of rest which they undergo, are peculiarly predisposed to the disease, did not sometimes become its victims; and it is therefore a remarkable fact that the proportion who were affected is so small.

Dr. Jameson states that of between two hundred and fifty and three hundred medical men engaged in practice in Bengal, but three took the disease.* He further observes, that at Nagpore the medical

* Bengal Report.

staff remained for several days, night and day, in the hospital, and yet all escaped.

At Bombay none of the hospital attendants were attacked, though they were assisting the patients day and night.*

Surgeon JUKES, in his report, says, "neither myself, nor any of my assistants who have been constantly amongst the sick, nor any of the hospital attendants, have had the disease."†

In the hospital of the Royals, says the Madras report, only one individual, out of one hundred and one attendants, was attacked.‡

In the general hospital, it is stated, upon the authority of assistant surgeon WHITE, that the friends and relations of the sick, who, by assisting the patients into and out of the bath, and every other way, were thereby exposed to be attacked by the disease were it communicable by touch, or through the medium of an infected atmosphere, in no instance were affected, neither were the dooly bearers nor hospital assistants.‡

Mr. Deputy Inspector FARRELL, in his report, states, that—

"It was observed that attendants on the sick, or persons resident in the same house, or even in the same ward of a hospital, with patients labouring under it, were not more liable to its attacks than others differently circumstanced. Indeed, it has been known to attack patients who had been admitted into hospital for other complaints, to have carried them off with its usual rapidity, and not to appear again in the same hospital, although it raged in all directions around it. These are strong facts, and if they do not disprove its contagious nature, they show, at all events, that it is propagated in a manner different from all known contagious diseases."§

At Berhampore none of the native attendants on the hospitals were affected.||

Dr. ALBERS, in his report to the Prussian government, says, that in Moscow—

"In many houses, it happened that one individual attacked by cholera was attended indiscriminately by all the relatives, and yet the disease did not spread to any of the inmates. It was finally found, that not only the nurses continued free from the distemper, but also that they promiscuously attended the sick chamber, and visited their friends without in the least communicating the disease. There are even cases fully authenticated, that nurses, to quiet timid females labouring under cholera, have shared their beds during the nights, and that they, notwithstanding, have escaped uninjured, in the same manner as physicians in hospitals have, without any bad consequence, made use of the warm water used a moment before by cholera patients for bathing."

* Ogilvy's Report. Kennedy, p. 57.

† Kennedy, p. 81.

‡ Med. Chirurg. Trans. xl. p. 143.

§ Hawkins, p. 263.

|| Trans. Med. and Phys. Soc. of Calcutta, Vol. IV. p. 277 and 280.

Dr. Walker corroborates this statement.

Professor Lichtenstadt states on the authority of Dr. SMIRNOV, staff physician at Orenburg, that during two months while the disease prevailed at Orenburg, and two hundred and ninety-nine patients were admitted into the military hospital, the personal attendants on the sick remained entirely exempt from the disease.

In the principal hospital at Riga there were seventy-eight persons employed, of whom two only were attacked with the disease, one of them; an *inspecteur de salle*, and not on immediate attendance on the sick.*

M. CHAMBERET, one of the medical commission sent to Warsaw by the French government, stated to the royal academy of medicine, at their meeting on the 11th of October last, that of one hundred persons attached to the hospitals, one only had died.†

Mr. Scott adduces evidence to the same effect.

"The most striking instances of immunity from the disease, under the most intimate personal intercourse, will be found recorded in the original reports. In the hospital of the royal regiment, only one individual out of one hundred and one attendants was attacked with the disease. In that of the 11th native regiment at Vizianagram, as recited by Mr. McAndrew, p. 33, not one was seized, although their numbers would seem to have been great. In the hospitals at Trichinopoly no attendants were taken ill. Many medical officers appear to have slept in their hospitals without suffering any bad consequences. At St. Thomas' Mount, where a general receiving hospital for patients with the cholera was established, and where the numerous attendants were people not at all accustomed to hospitals, not one of them was taken ill; yet it was not uncommon to see them using the bed-clothes of patients who had recovered or died. The same observation applies to the numerous receiving hospitals at Madras. Mr. Acting-surgeon Gibson, on reporting on a late attack, (April, 1823,) experienced by the 69th regiment at Wallahjabad, observes, I had ninety-two admissions, and increased the establishment of servants to double: I lived in the hospital amidst the sick day and night; and yet neither I myself nor any of the servants got the disease; but the hospital serjeant's wife, living in a retired room, not near any disease, had a severe attack."‡

The evidence to show that cholera patients have been introduced into crowded wards of hospitals, without that disease being communicated to the sick previously in the hospital, is equally conclusive.

Dr. Bell says that

"The military hospital at Dharwar, an oblong apartment of about ninety feet by twenty, was within the fort, and the lines of the garrison were

* Report of British Consul at Riga.

† Gazette Médicale.

‡ Madras Report, p. 1.

about a mile distant, outside of the walls of the fort. On two different occasions, (in 1820 and 1821,) when the disease prevailed epidemically among the troops of that station, while I was in medical charge of the garrison, but while no cases had occurred in the fort in which the hospital was situated, the patients were brought at once from their quarters to the hospital, which on each occasion was crowded with sick labouring under other disorders. No attempt was made to separate the cholera patients from the others. On one of these occasions, no case of cholera occurred within the hospital; on the other, one of the sick was attacked, but he was a convalescent sepoy who had not been prevented from leaving the fort during the day. The disease on each of these occasions was confined to a particular subdivision of the lines, and none of those residing within the fort were attacked.

"Here then were from twenty to thirty cases of cholera admitted, in the course of a few days, into the same apartment with from forty to fifty patients suffering from other ailments, yet not a single instance to countenance the notion of contagion occurred."

Of one hundred and fifty patients previously in the hospital at Berrampore, one only took the complaint, viz. the assistant apothecary.*

At Palancotta, for want of room, the cholera patients were at first put among the other sick without infecting them.†

Dissections too, appear to have been made with perfect impunity. Dr. Jaenichen says that he examined nearly fifty subjects who died of cholera, carefully inspecting the four cavities and often the course of the nerves and vessels, and that he and his assistants frequently wounded themselves without any ill consequences.‡ The same is stated by MM. Brière de Boismont and Legallois,§ and by the extraordinary committee of physicians assembled at Moscow.||

Dr. Foy, at Warsaw, inoculated himself with the blood of patients labouring under cholera, tasted their dejections, and inhaled their breaths without receiving the disease.¶

There appears indeed no direct evidence sufficient to prove that the disease was ever transmitted from one person to another by immediate communication. Dr. Walker himself, a contagionist, acknowledges that he could not learn that the contagionists in Moscow had any strong particular instances to prove the communication of the disease from one individual to another.††

At Jaroslan the disease could not be traced from one to another, and very often, perhaps most frequently, only one in a family was attacked with it.††

* Transactions of the Medical and Physical Society of Calcutta, p. 277-80.

† Kennedy, p. 113. ‡ Page 25. § Gazette Médicale, June 25, 1831.

|| Hawkins, p. 284.

¶ Gazette Médicale, June 25, 1831.

** Hawkins, p. 250.

†† Ibid, p. 251.

At Riga the illness of one individual in a family generally, was not followed by that of others, except where the first case was fatal, and the survivors gave way to grief and alarm and mental agitation, which has been proved to be one of the principal agents in propagating or exciting the disease. Mercenary attendants were rarely attacked.

In the cholera which prevailed in the 14th and 47th British regiments, at Berhampore, the soldiers, native servants, and inhabitants of the bazar, were affected, whilst the officers, the gentlemen residents, and sepoys assembled in the same cantonment, and promiscuously mixed together, were exempt.

We will not weary our readers with further evidence on these points, but proceed at once to the consideration of another argument which has been offered in favour of contagion, namely, the protection afforded by insulation.

As Dr. Hawkins has collected nearly all that has been adduced to prove the efficacy of insulation in protecting from the disease, and is himself a firm believer in its contagious nature, we will let him speak for himself on this point.

"Wherever measures," says he, "were taken to prevent communication in the Russian dominions, there the disease has been totally checked, or has made but little progress. Petersburg has not escaped, because a strict quarantine has not been observed between it and Moscow. The Moravian colony on the right bank of the Volga, and several German colonies in the government of Saratov, around which the disease was violent, adopted the system of exclusion, and were also unhurt. At Cumada Gubeewa, some Russian peasants, living together, scarcely a hundred yards from the village, shut up their hamlet on the first report of the disease having appeared in their vicinity, and by enforcing a strict quarantine during the prevalence of the epidemic, remained in health. The large establishment composing the academy of military cadets, at Moscow, was preserved by a similar plan from the scourge which was so active on all sides of it.

"Can we have a better proof of the contagious nature of the disease than that *insulation*, or separation from the sick, is almost universally found to preserve from the evil? Mr. Gomba, the French Consul at Teflis, in Persia, a person who probably was not devoted to any medical theory, writes to Baron Larrey, that the best and most sure mode of escaping from the calamity is *insulation and a residence in the mountains*. Of nine medical practitioners who were living at Teflis at the time of the invasion of the epidemic, four died during the first few days.

"Let us hear the history of Mr. de Lesseps, the Consul of France at Aleppo, an individual who probably has never interfered in medical discussions. "When the cholera approached that city in 1822, this gentleman retired, in company with all who wished to be of his party, to a garden at some distance from the city. His asylum was enclosed with walls, and was surrounded by a large fossé:

there were only two doors, one for entrance, the other for going out. As long as the malady lasted, he admitted nothing from out of doors without submitting it to the precautions observed in lazarettoes. His colony comprised *two hundred* persons, and consisted not only of Franks more or less acclimatised, but also of several natives. *Not a single individual contracted the disease*; while, at the very same time, within the city, four thousand beings perished in the space of eighteen days.*

"At Dantzic we find that the disease has prevailed for several weeks, *having probably been first imported by sea*. It has not extended from Dantzic to any of the neighbouring towns or districts of Prussia. The Prussian government enforces a very strict quarantine." p. 150-3.

If Dr. Hawkins intended to rest the doctrine of contagion upon the efficacy of the measures taken in Russia to check the extension of the disease, the point is now settled; since the disease has every where extended, and the government have withdrawn all the cordons sanitaires, acknowledging at the same time the inefficiency of these measures, and that there was no material part of the empire any longer to preserve. We have already seen that Dr. H. has been equally hasty in his confidence in the preservative powers of the strict Prussian quarantine; the disease extended from Dantzic to Elbing, Marienburg, Stargard, and Derschaw, and Prussia, like Russia, found these cordons wholly ineffectual. Indeed, if there is any thing settled in relation to cholera, it is as we shall presently see, the utter inefficacy of cordons sanitaires.

If certain insulated places have not been invaded by cholera, the same has happened to those which were not insulated. There is a small town in the Palatinate of Kalisch, which was constantly preserved from the disease, though surrounded by no cordon, and all the neighbouring places were affected; moreover, it received every day Russian families who fled from places where the epidemic raged.

"It is a well known fact," says Mr. Annesley, "that in the very centre of extensive districts, ravaged by cholera, there are certain narrow strips or patches of country, into which there existed no natural obstacles to the extension of the disease, but into which it never penetrated, although all around was one scene of desolation." p. 128.

Moreover, if insulation has appeared to protect against the disease, many cases might be adduced, in which this measure was ineffectual. The entire insulation of some persons and whole families at Moscow, says Dr. Jaehnichen, during the invasion of cholera, did not always preserve them from its influence; and according to the report of the British consul at Riga, the same was observed at this latter place. It

* P. F. Kerandren, *Mémoire sur le Choléra Morbus de l'Inde*. Paris, 1831.

is stated in the Madras report, that at Masulipatam, a town on the Coromandel coast, the disease first appeared among the convicts confined in the fort, and that it was not until about ten days afterwards, (July 10th, 1818,) that it was observed in the town and neighbourhood. A patient of Dr. GIBBS, in the naval hospital of St. Petersburg, who had been there for a month, was attacked and died on the fourth day. No other person in hospital was attacked before or subsequently.*

The Russian sanitary cordons have not preserved either Moscow or St. Petersburg; the sanitary laws of Prussia which were executed with a punctuality and rigour elsewhere unknown, have not preserved Berlin, whilst Thorn, in constant intercourse with Warsaw and Dantzic, enjoys an immunity from the pestilence.†

Further, the disease has occurred in ships at sea, and has attacked officers in their boats on the Ganges, far from any source of contagion. On the 28th of July, 1822, it broke out in the H. C. ship *Sir David Scott*, lying at the new anchorage off Saugor Island, Bengal, where she had already been two months, and was preparing to proceed on her voyage to China, her crew in perfect health. On the day just mentioned a poor old man was seized with cholera and died. The next day a fatal case occurred in a fine young man; third day there was another fatal case; fourth day ten new cases occurred, of which two were fatal; fifth day there were thirteen new cases, (all young, strong, and previously healthy men,) and five of them were fatal; sixth day eight new cases, one fatal; seventh day four persons were attacked, of whom two died; the next two days there were no cases, but after this a great many mild cases occurred, none of which proved fatal.

"In searching for a cause of this visitation of cholera," says Mr. Grant, "there is nothing to be found in the state of the atmosphere, as indicated by the thermometer or barometer, that will assist us; for there was no kind of change from what had previously existed: the heat was not greater than usual; thermometer from 78° to 86° F. The ship had been in its place of anchorage for two months, and during that time the crew had enjoyed perfect health: the breezes at that time always blew from seaward, and were cool and pleasant; there was no cholera in Calcutta, nor anywhere in our neighbourhood: it came upon us like a thunderclap. That it proceeded from some cause which had a general influence over the whole of the ship's company, but on some more powerfully than others, I have reason to believe, as there was a great and an immediate change in the looks of the people, which might, in some degree, be occasioned by the

* Ed. Med. and Surg. Journ. July, 1831.

† Report of M. Prunelle to the French Chamber of Deputies. *Arch. Gen. September*, p. 136, 7.

fears that pervaded their minds: but there was something more than that; for, on looking at the tongues of those otherwise in health, they were invariably much loaded, usually covered with a thick white crust.* He adds, "the disease was certainly not contagious."

We have thus examined in succession the principal circumstances which have been adduced in evidence of the contagiousness of cholera, and contrasted them with the facts which have been related of an opposite character. We leave our readers to draw their own conclusions from them. There is one fact however, not yet mentioned, which we will here notice, and which appears to be nearly decisive of the question—an experimentum crucis almost, as to the disease not being communicated from one person to another, which is, that persons have left infected districts, and died of the disease in various places, without the disease having been communicated to any of the inhabitants of those places. Thus the family of the Prince of Persia left Tabriz whilst the disease was prevailing there, and for the first ten days from four to six members of his suite were attacked daily, wherever they went, and yet not a single person of the villages through which they passed, or where they slept, took the disease.†

We have already noticed the fact of many Russian families flying from infected places, taking refuge in a small town in the Palatinate of Kalisch, without conveying the disease with them.

Dr. Albers in his official report, states that—

"During the epidemic, it is certain that about forty thousand inhabitants quitted Moscow, of whom a large number never performed quarantine; and notwithstanding this fact, *no case is on record of the cholera having been transferred from Moscow to other places*, and it is equally certain that in *no situation* appointed for quarantine, *any case of cholera has occurred*. That the distemper is not contagious has been yet more ascertained by the experience gathered in this city."

Several individuals from Riga died at Wenden and other parts of Livonia, without communicating the disease to a single person, while on the other hand, the disease spread in Courland and on the Prussian frontier, notwithstanding every effort to check its progress.‡

The advocates of contagion have not been insensible to these difficulties in the way of proving the contagiousness of cholera, but they have endeavoured to destroy their force by the assumption that the

* Cases of Indian Cholera. By Nathaniel Grant, Esq. London Medical and Physical Journal, October, 1831.

† Med. Clin. Trans. xii. 363.

‡ Report of the British consul at Riga.

virus requires "a certain predisposition of frame to manifest itself, even although exposure by contact of, or proximity to the affected be undisputed;"* and they have gone so far as to attempt to prove that it is the same in all contagious diseases, even small-pox.† This necessity for a predisposition that contagion may be received, is truly something new in the history of these affections. That we occasionally meet with individuals who from idiosyncrasy or some unknown cause are *insusceptible* to contagion, is true, but the whole history of contagious diseases shows that such instances are rare. Is it to be believed then that of hundreds of hospital physicians and nurses exposed to contagion, that but few only should be affected? that a contagious disease should ravage one side of a street or market place, and find all those on the opposite side insusceptible to its action? that it should be confined to one portion of a populous camp or city, although no means were taken to prevent its extending over the whole of the diseased population of either? or that persons labouring under a contagious disease should be carried into crowded hospitals, without communicating the disease to any one? And yet all these things have happened.

Our readers will perhaps think that we have dwelt too long on the subject of contagion; but it involves a question of extreme importance, the efficacy of quarantine regulations for arresting the progress of the disease; and as the pestilence continues to extend, and may even reach this country, it cannot be too soon determined whether it can be conveyed by persons or merchandise; since if it can, it is high time that sanitary measures were put in force. We have already shown a part of the evidence by which this point is to be determined, and shall presently present some further remarks on the subject. Let us first, however, consider the other theories which have been offered to explain the propagation of the disease.

Those who believe in the miasmatic origin of the pestilence, adduce in support of their opinion many facts, which, it must be admitted, are not without weight. Among these is the partiality of the disease for the margins of rivers and marshes, for low damp places in the vicinity of stagnant water—its occurrence on board ships which had no intercourse with the land, and attacking officers in their boats on the Ganges, far from any source of contagion—the restriction of the disease to particular limits, so that persons on arriving within these li-

* See an article in the *Foreign Quarterly Review* for October last. Mr. Kennedy in his work enumerates this predisposition as one of the laws of cholera.

† See an article in the *Quarterly Review* for October last.

mits became affected, whilst danger ceases on their leaving such spots—the peculiar liability of those who are exposed to the night air—and the extinction of the disease during winter and its reappearance in spring when vegetable decomposition begins.

Mr. COTTER states that—

“Generally speaking, the cholera has been observed to take the course of the rivers, more or less; and has always been more destructive in villages, whose situations are low, and contiguous to wet paddy fields. In some of the largest and most populous places whose sites are elevated, it has not as yet appeared at all, though at the distance of only ten or twelve miles, in places otherwise situated, it has been very prevalent.”*

Mr. CHAPMAN says, that during his march with the details of the 1st and 8th Light Cavalry to Seroor,

“No case of cholera appeared in camp until our arrival within a few marches of Chittledroog, when unfortunately having pitched on the banks of a nullah, containing a large quantity of stagnant water, it was lamentable to observe that in a few hours from the time of our arrival, no less than fourteen cases of Sepoys were admitted into the hospital, suffering from the spasmodic cholera in its gravest form. I took an opportunity of remarking to the officer commanding, the probability of the disaster having been occasioned by the encampment in the situation above described, and I have the satisfaction of observing that much attention being subsequently paid to this in particular, the disease in a few days suddenly left the camp, and not three cases occurred afterwards, in a march of two months.”†

Mr. HENDERSON states that—

“While in charge of the 13th Light Infantry in Burmah, in December, 1825, they were encamped along with the 38th and 47th, two of His Majesty’s Regiments on some jungly ground near Patnago—early in the morning, an officer of the 13th was attacked, and died in a few hours; one of the 47th shared the same fate, and the disease became general in the division, in twenty-four hours; from fifteen to twenty men fell victims to it. In the course of the following day, the divisions were ordered to take up new ground, on a height about a mile and a half in the rear, which was done in the course of the evening, and not a single case occurred in either corps after this move.”‡

Mr. Chapman observes, that whilst at Cape Comorin,

“Although little cholera was at this time prevailing among any other class of people, it became remarkable, that the grass-cutters of the escort were frequently attacked, and that, usually in the evening, after having gone to a tank to cleanse their grass. On one occasion, two grass-cutters had been together at this tank, at the same time; they were both attacked on the same night, at the same hour, and died on the following morning. Out of eighteen grass-cutters, we lost five, besides others being affected, in the space of three weeks:

* Madras Report, p. 140.

† Ibid, p. 182.

‡ Ibid, p. 39.

it was presumed, that the circumstance was in some measure connected with the putridity of the water contained in the tank, and which certainly bore every appearance favourable to such an idea, being scarcely passable from the nauseous effluvium which it evolved. The impression made upon the minds of these individuals themselves, was corroborative of this opinion: the tank was spontaneously deserted by them, and no case of cholera occurred during a subsequent period of nearly nine weeks' stay at the same place.”*

Dr. PETER SCOTT remarks in his report to the Madras Board, that—

“Dry, clean, open situations were obviously the most healthy, while more filthy situations, and such as were inhabited by the poorer classes, generally presented a great number of sick, and those frequently of a bad description. This was well illustrated at Vipery, in a situation abounding with stagnant water, the receptacle of every species of filth, but more especially at the spot, where I strongly suspect the epidemic first broke out at Madras, and where many fell victims to its severity; for, it was observed to be more prevalent amongst, and indeed for the first two or three days almost exclusively confined to, the natives residing in some huts, about which much offensive and corrupted matter had been accumulated, while those occupying the houses almost contiguous suffered but slightly, though comparatively more, than the inhabitants in the adjacent and more distant streets.”†

It is also stated in the Madras Report, that, during the prevalence of cholera at Madras, the crews of two ships—the Fairlie and Coutts, then in the Roads, became the subjects of the disease, but it did not appear on board the Coutts, till a fortnight after it had prevailed on the Fairlie—and it was noticed that “the men who worked upon deck, and those who slept to the landward side of the ship, were in both vessels decidedly the most obnoxious to the attacks of the disease.”

These and a multitude of other similar instances that might be adduced, would, in the absence of facts of an opposite character, be conclusive as to the miasmatic origin of cholera,‡ and at least seem to show that malaria has some agency in its production. We are not disposed to allow much weight to the fact of the exemption from the disease of some places particularly favourable apparently to the production of malaria, whilst situations in the vicinity less favourable have been ravaged with the disease, of which some remarkable examples might be cited.

Nor can we consider its progress against the course of the winds, of which there is a striking example in the advance-

* Madras Report, p. 23.

† Ibid, p. 19.

‡ A very remarkable instance of the production of cholera by miasmatic exhalation occurred at a school at Clapham, England. The particulars will be found in our *Periscope*, art. *Miscellaneous Intelligence*.

ment of cholera down the Coromandel coast against a strong monsoon, as *conclusive* against the disease being caused by miasma; since the property of penetrability possessed by gases, and which has but lately been investigated, may perhaps offer a solution of this difficulty; and further, the progress of the disease appears to have been much slower when opposed to currents of air, than when in the same direction.

But we must not shut our eyes to the fact of the disease occurring in places, which, if there be any such on the globe, must be incapable of engendering terrestrial miasma. The arid sands of Arabia, the rocky ridges of the Caucasus, and the nitrous steppes of Tartary, have not been exempt from the pestilence. Orenburg, where it broke out in 1829, appears from the description of Dr. Sakolov, to be one of those happy spots which would be selected by a physician for its peculiar exemption from all those circumstances which engender miasma. It is situated in an extensive undulating plain, traversed by fine streams, and is built on the higher bank of a river running in a defined channel, with no bogs or miry meadows at its margin, and the whole territory of Orenburg is nearly of the same nature, and the locality of the towns appear to have been well chosen.

The fact too of the disease having prevailed in Russia in defiance of intense frost, its continuing in many parts of the Orenburg government when the temperature was far below zero, and even breaking out in some places when the thermometer was 29° Fah. when, of course, the idea of animal or vegetable putrefaction going on is out of the question, and when so far as our present knowledge extends, this pestiferous agent cannot exist, seems incompatible with the opinion, that the disease is propagated solely by terrestrial miasma.

We shall not inquire into the agency of sol-lunar influence, or particular electric states of the atmosphere in the production of the disease, since they are mere hypotheses, resting on no ascertained facts; and the former has been most conclusively disproved by Mr. Scott, who has likewise shown that the latter has at least but little plausibility.

The only other theory we shall notice is that which ascribes the

* In Tiriss-Usmanova, a Mahomedan village, above one hundred and thirty miles north-east from Orenburg, containing seven hundred inhabitants, the disease broke out for the first time on the 5th of December, when the thermometer was at 29° Fah.; under the same degree of cold it prevailed till the 23d of the same month; and in this short interval it seized one hundred and forty-seven persons, or above a fifth of the population, of whom thirty-seven, or nearly a fourth died. Several analogous occurrences are related in the Russian reports.

disease to some peculiar and unknown distemperature of the atmosphere. It has been objected to this, that if the germ of the disease existed in the air, it should travel under barometrical laws; should be propagated in the direction of the winds, and its velocity should be as great, and that every country over which the wind blows should be affected.

That a vitiation of the air may exist, which is inappreciable by any of our instruments, can scarcely be denied. Who has detected by the thermometer, the barometer, or by chemical analysis marsh or animal miasmata, or the contagious principle of small-pox? Who has detected the particular vitiation of the atmosphere productive of the "influenzas" which have so often pervaded the whole surface of the globe, and which cannot depend upon marsh or animal decomposition, since they have prevailed equally in the intense cold of winter as well as in the heats of summer, and in every variety of locality.

That the extension of this atmospheric distemperature is independent of the course of the winds, is shown by the whole history of these epidemics. That which is prevailing in this country at the present moment appeared at Canton and Manilla in November, 1830; it preceded the cholera in Russia, Poland, and Prussia; prevailed in France in May and June last; in England during the heats of July and August, and reached this country in November, and has continued during one of the most intense winters we have had for many years. The course of these epidemics, with a single exception, so far as we can learn, has been from east to west, gradually extending without regard to prevailing winds.

That some general distemperature of the air exists during the prevalence of cholera,* and that this vitiation takes place gradually, and produces a particular diathesis, appears from sufficiently conclusive evidence.

Dr. Walker, in his report to the British government, states, that by far the greatest part of the medical men, (of Moscow,) are of opinion that the disease is not contagious, but produced by some pecu-

* Even animals have felt the influence of this distemperature. In Hindostan, in 1817, numbers of cattle are said to have died of cholera; numbers of dogs were attacked in the streets of Calcutta in October, 1827, with choleric symptoms, and died. Mr. Chalmers says that in the towns in India near the hills, where cholera was so fatal, a disease occurred among the cattle which kept pace with, and often exceeded in mortality that of the human species. Dr. Ranken states that goats and camels died of it at Rajputana, and Dr. Jaehnichen says that in Moscow, during the prevalence of the epidemic, poultry, as chickens, turkeys, &c. were affected. It is said in Prussia that multitudes of fish died during the prevalence of the epidemic.

liar state of the atmosphere not cognizable by either our senses or by instruments; that this was proved by almost every person in the city feeling during the time some inconvenience or other, which wanted only the exciting cause of catching cold, or of some irregularity in diet, to bring on cholera.

During the prevalence of the disease at Orenburg, Dr. Onufriev states that there was scarcely a single inhabitant who had not some symptoms of disordered digestion. At St. Petersburg, previously to the appearance of the epidemic, every person complained of a tendency to diarrhœa, which in some cases was very profuse,* and it was the same at Berlin, according to Dr. Steffen.† Six months before the epidemic invasion of Poland, sporadic cases of a most violent character occurred.‡ The British consul at Riga, in his report to his government, states, that half the town has been visited by diarrhœa, and that the slightest deviation from the regimen now prescribed, (consisting principally in abstinence from acids, fruit, beer, &c.) invariably produces an attack of that nature, and generally cholera; fright and intoxication produce the same effect.

Dr. Burne informs us, that during the raging of the cholera on the continent, there occurred at the Chancery Lane Dispensary, London, a great number of cases of dysentery, diarrhœa, and cholera, which had so decided an epidemic character, that he believed them to be produced by the causes which were in operation on the continent.§ Whilst cholera has been committing such ravages in various places in the Baltic, Elsinœur and the adjacent islands, have been visited by a peculiar form of disease, attended with much derangement of the digestive organs; sometimes passing into severe intermittent fever, and at others presenting the appearance of malignant typhus.||

The following extract of a letter from Dr. J. Brown to Drs. James Johnson and Twæedic, dated Sunderland, Nov. 10th, 1831, will show that previously to the prevalence of cholera epidemically in that town, there was a marked predisposition to bowel complaints.

“Early in the month of August, cholera appeared and speedily became very prevalent. It ranged in all degrees of intensity, from slight bilious attacks, to cases attended with violent spasm, coldness, collapse, almost (if not complete) arrest of the circulation, *white discharges, suppression of urine, and in short, all the symptoms ascribed by observers to the Asiatic and Continental diseases* Of these more intense cases, several were fatal, some of them within twelve hours; whilst

* *Glasgow Edinburgh Medical and Surgical Journal*. April, 1831.

† *Gazette Médicale*, Oct. 22, 1831.

‡ M. Chamberet's communication to the Royal Academy of Medicine. *Gazette Médicale*, Oct. 1831.

§ *London Medical Gazette*, Vol. VIII. p. 462-7. ¶ *Ibid*, p. 829.

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others narrowly escaped by prompt and skilful medical assistance. Such cases occurred in situations remote from each other; some of them several miles inland—one, for instance, and that a fatal one, in a female living in the village of Boldon, five miles in the interior, and remote from the river. Others of the agricultural population suffered in various situations: some certainly near the river, but there were no ships in at the time, which had come from suspected places.

“On the abatement of the heat, cholera became less general; but did not totally cease, cases continuing to recur at intervals, some fatal, others of great intensity, but terminating favourably; whilst the prevailing gastric and intestinal constitution was marked by the frequent occurrence of cases of fever, commencing with vomiting and purging of matters variously coloured—in short, by symptoms of cholera; and this state of things continued till the almost simultaneous occurrence of four deaths from cholera, on the 21st ult. and 1st inst. excited general alarm.—For what has subsequently occurred, the reports to the Board of Health must be referred to.

“Whilst matters are thus proceeding in Sunderland and its immediate vicinity, information ~~have~~ received from various channels, leaves no doubt on my mind, that a similar train of events has been in progress generally throughout the north-eastern division of the kingdom—the same prevalence of fever, of which the initiatory stage is marked by vomiting and purging—the same occurrence of fatal cases of cholera, since the season of heat and fruit had passed; but so far as I know, the same prevalence of the intense forms of the disease has not been manifested elsewhere as here; yet this difference in degree does not, I imagine, make our state *essentially* different.—What is our fate to-day may be that of others to-morrow. A fortnight ago we were no worse than our neighbours.”

Dr. G. Otto, of Copenhagen, in a letter with which we have been lately favoured, informs us, that there is at present prevailing in Copenhagen, a marked disposition to diseases of the digestive organs, as diarrhœa and common bilious cholera; and it is remarkable too, he adds, that the evacuations of common cholera, which are usually bilious, have become watery and slimy, which circumstance, he says, makes him believe that the disease will gradually change into epidemic cholera. “I have,” he further observes, “within the last fortnight, treated some cases which were so violent, and in all their symptoms so like oriental cholera, that were the epidemic prevailing in the town, I should not have hesitated to declare them to be that disease.”

If the fact of the disease being often confined to particular limits be urged against the existence of a general distemperature of the air, such objection is much more available against the contagiousness of the affection; since, to explain its not spreading, it is necessary to believe that it will affect those only who are predisposed, an assumption in relation to a contagious disease, which we have already shown

to be entirely gratuitous. Whilst on the contrary, it appears to require no very great stretch of faith to believe, that excesses in eating and drinking, exposure to night air, &c. which the contagionists consider as forming the predisposition, may excite the disease, and that their action is generally required for its production.

Nor does it seem very difficult of belief, that in low, damp, filthy, ill-ventilated places, that the distemperature of the air may be increased, and the mortality of the disease therefore greatest in such situations.

We shall not dwell, however, on this point. It has been our object to present our readers with facts, and not with arguments; and we leave it, therefore, to them to decide how far this last theory is reconcilable with the phenomena of the disease.

Before leaving this branch of the subject, however, we may say a few words in relation to the production of a local focus. That in cholera, as in dysentery, fevers, and in several diseases, where a number of patients are confined in a small, dirty, ill-ventilated apartment, the atmosphere may be so vitiated that healthy persons remaining in such a place become particularly liable to the disease, we cannot in the present state of our information either aver or deny, but some facts which have been related, incline us to the affirmative. But even if this be a fact, it is still to be proved that this arises from a *specific* emanation from the bodies of the sick; and not from a vitiation of atmosphere—the same in all diseases—which only predisposes to disease—whilst the particular form is determined by the reigning epidemic constitution; and that there does exist at times a disposition to certain diseases in preference to others, independent of the existence of what is considered as a specific virus, seems indisputable.

We must not conclude this article, although it has already grown to too great a length, without offering some remarks on the sanitary measures which should be adopted in relation to this disease. Among the first, we must enumerate the avoidance of all excesses in eating and drinking, and all those causes which ordinarily produce derangement of the digestive organs. Surgeon Daw quotes the following fact as an illustration of what care and temperance can perform in the way of protection from the attacks of cholera. The fact is not of itself conclusive, but connected with other circumstances, it is at least important.

“Two bodies of men, one amounting to three hundred, the other one hundred persons, were located in adjoining situations when the cholera arrived. The smaller body immediately determined to live temperately, and by avoiding the night air, and the other predisposing circumstances, which were obvious, to endeavour to escape the distemper. The plan succeeded so well that only

one individual was seized of the one hundred. The larger body adopted no precaution. They lived in their usual way, and one-tenth of their whole number perished.”*

It is equally important to attend to personal and domestic cleanliness, and to ventilation; to avoid dwelling in low, moist situations, and especially sleeping in damp, ill-ventilated apartments; and in general to shun all those causes which we have pointed out as predisposing to or exciting the disease, and which we need not again here enumerate.

Finally, should the disease appear in any of our cities, the hygienic measures we have alluded to, should be enforced by the proper authorities. If the place in which it occurs be filthy, ill-ventilated, with the dwellings close together, and a crowded population, the measures found so useful in yellow fever should be resorted to. The inhabitants should be dispersed until the place can be perfectly cleansed and purified. When, however, it extends to the more cleanly parts of a city where there is a free circulation of air, such a measure would be productive of great distress and inconvenience to the inhabitants, without the slightest beneficial result to others.

We have not included quarantine regulations or the insulation of places among our sanitary measures, because a careful examination of all the documents to which we have had access, and they are very numerous, have not satisfied us that the disease can be communicated from one person to another, or conveyed by merchandise; and ample experience abroad has shown the utter inefficacy of both these means in arresting the progress of the disease, and the great aggravation of it, and the awful distress which is caused by the latter. It is vain to say that these quarantines and cordons sanitaires have been evaded; if they cannot be rigidly enforced by the despotic governments of Europe, what are we to expect from them, (allowing the disease to be contagious,) in this country. On the first appearance of the pestilence, Russia formed immense military lines for the purpose of arresting its progress; St. Petersburg and other places were completely surrounded—what has been the result? the disease has spread over the empire, and the inefficacy of these measures have been there acknowledged. The moment the revolution broke out in Poland, that unhappy country was completely environed by the troops of Austria and Prussia, and when the cholera appeared there, these cordons were increased, and the most rigid quarantine enforced. M. Brière de Boismont, in his journey to Poland, had to pass through these lines, and bears testimony to the severity with which sanitary

* Kennedy, p. 91.

measures were executed. M. Prunelle, in his report to the French chamber, states that those of Prussia have been enforced with a strictness before unknown. Nevertheless, three months scarcely elapsed from the appearance of the pestilence in Poland, before it had passed the triple cordons sanitaires of Austria and Prussia, pervaded the whole of the grand duchy of Posen, ravaged eastern Prussia, penetrated into Silesia, and destroyed thousands of victims in Galicia. The pestilence advanced towards Berlin:

"Its progress," says M. de Boismont, "is disputed foot by foot, with all the energy of despair, a last cordon is created on the Oder, composed of the élite of the Prussian troops, the guards; nevertheless, the cholera entered the capital early in September. Those who know Prussia, will not doubt that the orders of the government were rigorously enforced. The same measures were taken to protect Vienna, and with the same results."

Austria and Prussia, like Russia, have withdrawn all their cordons, and acknowledge not only their inutility, but that they are productive of immense evils.

* We will spare our readers the details of the horrors which have resulted from the insulation of places where the disease was prevailing. Those who have read the vivid description of the plague in London, by Defoe, may have some idea of the scenes presented at Opatow, a town in the palatinate of Sandomir, and in other places which have been insulated, whilst the disease was raging in them. The total suspension of business—all succour cut off—the sick, the dying, and the dead mingled together, and alike neglected—every inhabitant agonized with terror, and thus subjected to one of the most powerful predisposing causes of the pestilence—and all those scenes of human wretchedness and depravity, which are too often enacted when men are released from the controul of the laws, and abandon themselves to despair.

The length of this article admonishes us that we must come to a conclusion, though we are far from having exhausted the subject. It has been our object, however, to present our readers materials upon which they may form their own judgments, rather than to lead them to adopt our conclusions, and have therefore candidly stated the prominent facts, without concealing those which militate against the various theories we have examined, or attempting to reconcile their discrepancies by ingenious sophistries.

The consideration of the pathology and treatment of the disease must be postponed to a future occasion, and we regret this delay the less, inasmuch as it will enable us to benefit by the additional lights which will no doubt be shed upon these subjects, by the able and acute minds now engaged in the investigation.

BIBLIOGRAPHICAL NOTICES.

XII. *A Short Tract on the Formation of Tumours, and the Peculiarities that are met with in the Structure of those that have become Cancerous; with their mode of Treatment.* By Sir EVERARD HOME, Bart. &c. &c. 8vo. pp. 98, with several plates. Sept. 1830.

No department of surgery is more replete with interest than that which treats of tumours, and particularly that class which eventuate in cancer. While many conflicting opinions have been advanced as to their origin and development, and much adverse experience elicited to sustain this contrariety of speculation, Sir Everard Home has been industriously employed searching out and arranging all the testimony which a long life sedulously devoted to professional pursuits could afford. If severe industry and unremitting perseverance can offer a rational hope that this ~~struse~~ subject can be elucidated, we would expect to receive ample information from the researches of the veteran surgeon.

Tumours, according to Mr. Home's investigations, result from the extravasation of blood, or some of its ingredients, after external violence, in greater quantity than is necessary to repair the injury.

Fatty tumours are but the deposition of fat in parts slightly injured, not recovering their healthy action, but continuing to deposit that substance. The materials of tumours after severe injury differ according to the quantities and new combinations of the effused fluids, but although differing from each other, are generally of the same character of the surrounding healthy parts; this fact renders it necessary for the surgeon to be familiar with the physical attributes of the texture in which the tumour is seated.

There is a peculiar species of tumour, yellowish-white colour and resembling a kidney, located in the neck, involved in a cyst, and attached to the neighbouring parts by small blood-vessels and loose cellular membrane; to remove it the surgeon must merely lay open the cyst and turn out its contents. There is another character of tumour, involved in a nerve and deriving an investment from it.

"A lady, twenty years of age, had a tumour on the outer side of the biceps muscle of the right arm, the size and shape of a pullet's egg; it was moveable in the surrounding parts; it had been several years in acquiring its present size, and was very painful when pressed upon. Its rapid increase induced her to have it removed by the knife. When the parts were fully exposed, the surface was smooth and shining. At both ends the tumour terminated in a white cord: upon cutting through the outer covering, the real tumour was found to be inclosed in a nerve. When this discovery was made, it was thought prudent to divide the nerve at both ends and remove the whole. The patient had no use afterwards of her thumb and forefinger, and had a numbness in these parts; the skin which covered them was unusually rough and dry, and the cuticle came off in scales.

"On examining the tumour, three inches of the nerve itself had been removed; it was separated into two portions, each much flattened, and passing over the

sides of the tumour. There was also a thin nervous expansion, not thicker than a membrane, completely investing the whole. This was readily separated, although more firmly attached at the extremities." p. 5.

The tumour seemed to be made up of serpentine fibres in the course of the nerve, separated from each other by its substance: a radiated structure was discernible at its surface.

The second case cited, is analogous to the above, and displays a similar involution of the nerve, the tumour being involved in the axillary plexus; it was removed as in the former case. Four days after the operation the appetite flagged, pulse became frequent, skin hot, spirits depressed, and on the following day the patient died. Post mortem examination revealed the cyst contracted and four times thicker than at the time of the operation, cavity almost filled with coagulated blood and lined with coagulable lymph. The cause of death in this case is ascribed to the consequent inflammation. Mr. Home assumes as diagnostic of this character of tumour, absence of pain when moved laterally and an excessively acute pain when motion is attempted in the other direction.

The next class embraces those tumours which have their origin in the diploe of the skull and eventually make their way through the external table. In the case related, the tumour which resulted from the kick of a horse many years before, was located originally underneath the external table of the right parietal bone, and the tumour in its progress approached so near the outer edge of the orbit, that there was only space sufficient to admit the blade of a saw between them. The superior and massive part was soft, consisting of fat mixed with a steatomatous substance, while the base was strictly bony. The tumour was successfully removed, and Mr. Home deduces the following surgical corollary.

"This case establishes the fact, that all tumours on the head may be removed without danger, provided no symptoms have occurred during their increase of any of the functions of the brain having been interfered with." p. 16.

Hitherto cancer has been esteemed a disease originating in a poison generated in different parts of the body from accidental or other causes, and especially in the glandular structure.

"As the same parts in different individuals, under similar circumstances of violence, do not always form cancerous tumours; when they do so, it must arise from a peculiarity of constitution, disposing the injured parts to take on this disease, and therefore the tumour in its origin cannot be cancerous." p. 17.

We cannot discover the justness of Mr. Home's conclusion from the above general position, that all persons under similar circumstances of violence are not subjects of cancer, viz. that the early stage of this class of tumours is free from cancerous taint, but, so far as the mode by which the injury is inflicted is concerned, we are prepared to admit that it is not a cause of cancer, for had an injury of the same amount been inflicted in a different manner, the cancerous condition of the constitution would have been alike prepared to excite this disease; were it not thus, the recuperative powers of the system would immediately have repaired the breach.

Our author denies that disease is hereditary, but admits, what we conceive to be the same in substance, an hereditary constitution predisposing children to the disorders to which their parents were most obnoxious.

In glandular structures, in which the vessels composing the glands are

wounded and their contents poured out, the effused fluid consists of the peculiar secretion of the organ and the ingredients of the blood, which are undergoing the necessary changes to produce this secretion. The tumour formed in this instance is composed in one part of lymph globules, with tubes passing through them, containing carbonic acid gas and which become vessels filled with red blood. This character of tumour is denominated scirrhus and is the preparatory stage to true and stony cancer. By analysing this structure and observing the changes which the several parts underwent in the different stages of cancerous disease, Mr. Hôme was induced to consider the serum and lymph globules to be the parts that become vitiated and are enabled to propagate the morbid poison.

"This opinion receives strong confirmation by the red blood not being met with in such tumours, in the latter and confirmed stages of the disease, and the tumour itself in its increase, becoming harder in its texture; to which we may add, that the only discharge that takes place, when such tumours produce any, is an aqueous fluid, or, in other words, serum devoid of its coagulable lymph, which in a natural state it contains in considerable quantity." p. 24.

"The compacted lymph globules, among which there is no apparent circulations of any kind, is probably the morbid part, and that which comes on the disease by its contact and absorption; since, as the malady continues, it increases in bulk; and when any part of it remains, after an ineffectual attempt at its removal, a rapidity in the progress of its increase takes place." p. 28.

The aqueous fluid which is separated from the consolidated mass of lymph globules does not partake of the morbid poison: this is illustrated by several cases of hydatids in the mammæ. The tumours in these instances proceeded from blows received accidentally, and it is probable that the blood effused from the accident left the serum which constituted their contents.

Tumours of this character were formerly termed cancerous hydatids, but in the opinion of Mr. Home, have not the slightest connexion with this disease.

Scirrhus is more frequently seated in the mammæ of females than any other part. Climate and constitution have a very considerable influence in forming such tumours: in Otaheite and the neighbouring islands the women decide their quarrels by fighting, the blows are principally aimed at the breast, which is unprotected, and yet cancer is never met with in these islands. Our author introduces a number of cases to exemplify the various stages through which scirrhus tumours pass in becoming open cancer, with many anomalous concomitant symptoms, and others to illustrate that form of tumour which is strictly pseudo-scirrhus. We will quote a few.

"A lady, fifty-eight years of age, had a tumour in the breast, which for nine or ten years had been growing to its present size. Several glands in the axilla were enlarged; the tumour itself made slow progress, but the skin, which firmly adhered to the tumour, and had the appearance of being tucked down upon it, had in the neighbourhood become studded over with small tumours, resembling split peas: they first appeared there, but in nine months they were met with all over the body, on the opposite side as well as that on which the tumour had formed. They were in no place close together, being about an inch apart and nearly the same in size, but rather larger near the original disease. They gave a considerable degree of uneasiness and her health was much impaired. In a few months she died. The tumour had previously become painful; frequent retchings had been produced, and her stomach retained little or no food." p. 40.

It is questionable whether the small tumours of the skin were cancerous, since they are found in cases in which we have no reason to suspect the existence of cancer.

"A lady, who had occasionally matter, blood, or bloody water issue from the nipple, had, some months after, a tumour formed, and the nipple ulcerated; the glands in the axilla swelled, and all the symptoms of cancer came on, of which she died." p. 45.

"A woman was received into St. George's hospital with a small tumour at the basis of the nipple, which was very moveable. The first symptom of the disease was blood oozing from the ducts in the nipple. It was removed with the surrounding parts. The tumour, when examined, after the removal, was found to be no part of the gland of the breast, but a newly-formed structure; and I never heard of the disease having returned." p. 45.

"A lady, twenty-three years of age, had a tumour in the breast, hard to the feel, giving occasional pain: it had continued for a year, when Mr. Hunter extirpated it with the parts surrounding it. Upon examination of its structure, it was found to be a solid mass, distinct from the neighbouring parts, to which it was slightly attached." p. 46.

The character of this tumour was doubtful, but Mr. Home thinks it would eventually have become cancerous.

"A lady, thirty-two years of age, the mother of several children, discovered by accident a tumour in the breast; as the tumour was moveable, means were taken to disperse it; but these proving ineffectual, I was consulted, and advised its removal, which was acceded to. At the time of the operation the tumour moved freely in one direction, but was more confined in that of the fibres to which it was found to be attached, and part of that muscle was removed along with it. The wound healed in three weeks. In six months after the operation a fulness was felt in the pectoral muscle attended with pain; in a twelvemonth a tumour had formed and the skin was put on the stretch. The pain had become intolerable; the tumour daily increased; and, upon her being seized with vomiting, the lower part became discoloured from the rupture of the smaller vessels. A fortnight afterwards the skin broke, and a fungous excrescence appeared, covered with blood, from the vessels in the surface giving way. In about three weeks she died." p. 48.

We here discover the difference between cancerous disease of a glandular and that of a muscular structure; in the muscular it assumes the character of true hæmatodes. The following case is introduced to illustrate the symptoms which frequently attend those tumours which encroach upon a nerve without involving it in the diseased mass.

"A lady, between fifty and sixty, had a tumour in the breast, which was removed by Mr. Hunter. The parts healed kindly; but at the end of a year and a half a gland in the axilla enlarged, and the pain was dreadfully severe, and she coveted an operation. In performing it, upon dividing a nerve that passed over the surface of the tumour, she said, 'the pain is gone;' and it never after returned: but the progress of the disease was not stopped, and in two or three years she died." p. 50.

We have already stated, that the *mammæ* of females are most frequently the seat of scirrhus, and next to them in proclivity is the tongue. Almost every local disease of the tongue is prone to become cancerous from the glandular structure of this organ. In relation to the treatment of tumours in this part, we have but one principle, which is arbitrary—namely, remove them immediately, upon determining that they are cancerous, or disposing to that char-

acter. Mr. H. performs the operation for removing diseased portions of the tongue entirely by the ligature; this mode, while it prevents the danger from hæmorrhage, entails pain and suffering upon the patient; but still the favourable result of the many cases which fell under Mr. H.'s care, seems to warrant its use, notwithstanding the inconvenience arising from the temporary salivation, resulting from the irritation of the ligature, and the unpleasant fætor attendant upon it. In this expression of cancerous disease, the same exclusive rule, relating to scirrhus of the mamma, maintains, to wit: when the disease is strictly local and circumscribed, the operation offers a rational hope of relief; but if it has become constitutional, and by this term we do not mean that irritable state of the system which appertains to almost all local diseases, but rather that cancerous condition which is *sui generis*, and can only be recognised by its manifestations in different glandular structures, no local address can offer the most remote expectation of cure, for the primary seat of disease is no longer the irritating agent, but the assimilating apparatus has become impressed with a peculiar and malignant ability to establish and propagate diseased action.

"Margaret Dalton, forty years of age, was admitted on the 25th of December, 1801, into St. George's Hospital, on account of a tumour, the size of a pea, on the right side of the tongue, near its edge. It had begun by a pimple, and increased without pain. It impeded her voice, and, when bruised by the teeth, bled freely. It was removed in the following manner:—The tongue being thrust out, a crooked needle with a double ligature was passed through its substance, some way beyond the tumour; one ligature was tied behind the tumour, the other before it, including a segment of the tongue. A considerable salivation ensued, which was much more troublesome than any other symptom, and continued till the slough came away. The ligature furthest from the tip separated on the sixth day, and the other on the seventh. In three days the wound healed, and she got well." p. 63.

"A gentleman, sixty years of age, consulted Sir William Blizard for a tumour on the tongue, the size of a swan shot, hard, and firmly connected to the surrounding parts. I was requested to assist in the operation. A needle with double ligature was passed through the tongue, behind the tumour: when tied it gave a good deal of pain, but the sensibility was immediately destroyed. After the operation the patient sat down to dinner with great cheerfulness: on the sixth day the ligature came away. On meeting the patient a few days afterwards, I could only perceive a slight indentation where the tumour had been."

"A gentleman, thirty-six years of age, had a small sore upon the edge of the tongue, the effect of irritation of the tooth, with which it came in contact. The tooth was extracted; a second tooth was drawn, but the sore put on a malign aspect, and gradually increased. In a few months it had ulcerated so much as to make talking painful, and his words indistinct. He lingered in this melancholy state for six months, and died." p. 68.

The next character of cancerous disease which attracts our attention, is that of the testicle. Two modes of progress is discernible, the one becoming hard and involving the cord, and finally, the lymphatic glands as high as the loins; this is genuine cancer. The other contaminates the neighbouring parts, and is propagated by means of the absorbent glands.

"In either of these local diseases, the parts are not capable of contamination of the neighbouring parts, till after those have long continued to have lost their healthy state; and when the organ is extirpated early, the patients, I believe, always get well." p. 71.

Mr. Home, in the above paragraph, labours to impress his original position upon us, that the early stage of scirrhus is not malignant; but we apprehend that we shall find the cancerous infection to be the sole cause of the loss of tone in the parts in proximity to the disease, and the distinction made above, is more precise than just; for surely, if in this condition of things, we should remove the organ, leaving the neighbouring parts in this unhealthy state, not cancerous, according to our author, but merely declining in tone, we should not have eradicated the disease, or even arrested its course; this Mr. H. admits in the following words:—

“But this is a rare occurrence,” (speaking of the removal of the disease by extirpation of the testis,) “when the disease has completely established itself; and when it has not, an operation, or any other violence committed on the parts by its irritation, accelerates the progress of the disease.” p. 71.

Cancer is not unfrequently located in parts of the system not glandular in their structure; in many instances local injuries give expression and development to the latent cancerous leaven.

We will quote a paragraph from Mr. H. which, while it confirms our views of the previous existence of a cancerous temperament, enforces upon us the necessity of managing judiciously every local affection, however slight in the first instance its tendency may be to become malignant.

“When parts have been long in a diseased state, we have no security against their not ultimately taking on a cancerous action; but in all such cases, there must be a peculiarity of constitution existing previously to the parts undergoing such a change.” p. 77.

The last character of tumour mentioned by Mr. H. is seated under the lower jaw, and from its structure appears to be cancerous.

“A gentleman, thirty-five years of age, had a tumour formed behind the angle of the lower jaw, considered to be a lymphatic gland; this increasing, was removed. Three years after another formed, and slowly increased to the size of a pullet’s egg; it had no sensation; he received a blow upon it with a stick, in a drunken brawl, which did not injure the skin. In a few weeks it became double its former size, and was removed by Mr. Hunter. The tumour, when examined, was in its substance one half white, the other black. The colour was from blood, which pervaded the part formed after the blow, but did not extend to the original portion.” p. 93.

Notwithstanding the labour and attention devoted to this subject, still all is indefinite and conjectural in relation to that peculiar condition of the system, which generates true cancerous disease, and consequently, no definite or accurate prognosis can be ventured in reference to local affections. Whether or not, peculiar expressions of disease would prove malignant in their termination, constituted a quere, which Sir Everard Home, after a half century’s attention to the subject, was unable to determine.

While it is a subject of painful regret, that diagnostic acumen could not be attained, it is a much more melancholy consideration to humanity, that little has yet been done to check the malign flight of the fell destroyer. Hemlock used internally and externally, has been found to be a valuable mean in mitigating the sufferings of the patient, while sarsaparilla, in powder, before it has been exposed to the deteriorating influence of heat, has proved a most valuable adjuvant in controlling indurated glands, evidently tending to scirrhusity.

In taking leave of this little volume, we experience those painful emotions which characterize the departure of an old acquaintance. It has been announced in its preface, to be the last work which its favoured author shall ever submit to public inspection, and it is but a just tribute to the labour and toil of a professional career, embracing more than half a century, to pronounce this, like all other productions from the pen of Mr. Home, to be based upon practical observation, and is consequently the simple, but honest detail of facts. The candour with which it displays the mode of treatment, and its results, in one of the most baneful maladies to which flesh is heir, will insure for it an attentive perusal from every friend of medical science, and for its author a most earnest prayer that he may enjoy, in the wane of life, that repose which virtuous intent and industrious enterprize cannot fail to secure.

A. L. W.

XIII. *A Treatise on Physiology applied to Pathology.* By F. J. V. BROUSSAIS, M. D. &c. &c. &c. Translated from the French, by JOHN BELL, M. D. &c. &c. and RENÉ LA ROCHE, M. D. &c. &c. Third American edition, with notes and a copious appendix, 8vo. pp. 666. Philadelphia, Carey & Lea.

It is not our intention, at this late period, to enter into a formal review of the Physiology of the celebrated professor of Val-de-Grâce. The fact that three editions of the American translation have been called for within the short space of five years, very fully evinces the estimate in which the work is held by the medical public of this country. A patient study of his *Treatise on Physiology applied to Pathology*, is indeed indispensable to all who may desire to form a correct estimate of the value of the doctrines in relation to the nature and cure of diseases, advocated by M. Broussais; doctrines which have within a few years exerted so powerful, and in the estimation of many, beneficial an influence upon medical opinions and practice.

That the treatise before us is destitute of error either in matter of fact or in doctrine, we pretend not to assert. The contrary must necessarily be the case, as well from the nature of the subjects of which it treats, as from the peculiar circumstances under which the work was composed. With the exception of Bichat, in his *Treatise on General Anatomy*, no one had attempted before Broussais, the task of collecting the various facts known in relation to the healthy functions of the human system, and comparing them carefully with the state of the same functions during disease; of determining accurately the relative influence of the different organs upon each other, and the modifications which the morbid conditions of one set impress upon the actions of another, and of arranging the materials thus obtained into a systematic form. Had perfection crowned this difficult task, we should have considered its author as something more than mortal. Physiology as a science is yet in its infancy; every year new discoveries are made in relation to the vital functions, by which previous opinions are either confirmed or subverted; this added to the rapid accumulation of pathological facts, renders each new labourer in the field, with only a moiety of the talents and industry of Broussais, capable of detecting errors in his system, and of filling up and improving the general plan, the outlines of which he has so ably sketched. It is not for the invariable correctness of his opinions upon the subject of physiological pathology, although the

accuracy of very many of them has been established by subsequent investigation, that the system of M. Broussais commands our praise; it is from its having been the means of directing the attention of physicians to physiology as the only correct basis of pathology, and to the manner in which the study of the functions of our several organs during health leads us to an acquaintance with the morbid conditions of the latter, upon which the derangement of the functions constituting the phenomena of disease depend. By pursuing his pathological investigations in close connection with physiology, M. Broussais has confessedly removed many of the errors of preceding physicians, and if he has not invariably arrived at truth, he has indicated the only certain road by which it may be obtained. Morbid phenomena have in consequence already been divested of much of the mystery by which they were formerly enveloped, and the application of our remedies are now guided by system and their effects calculated with some degree of certainty, where formerly their administration was marked by the grossest empiricism.

Should the author be induced to prepare for publication a second edition of the present treatise, he will doubtless correct many of the errors which it now contains, and by availing himself of the labours of subsequent investigators in physiology and pathology, give to his system in other respects a greater degree of perfection.

But whatever may be our opinions as to its general merits or demerits, the *Treatise on Physiology applied to Pathology* constitutes a necessary introduction to the study of the other writings of its author, the principal of which have already or will shortly appear in an English dress.

The translation before us presents a very correct exposition of the views of the author as presented in the original—we say this from having made a comparison of the larger portion of it with the latter. For the fidelity with which the translators have performed their task, they deserve the thanks of all who are unable to consult the work in the French. It was one, we confess, of no common difficulty, as well from the novel forms of expression which the author has often been obliged to make use of in the statement of his doctrines, as from the obscure style in which much of the first part especially is composed. Inaccuracies in the translation of scientific works, though too often committed either from ignorance or carelessness, are at once an unfairness in relation to the authors, and a gross imposition upon the readers. It is on this account that we noticed so pointedly the able manner in which the present American translation of M. Broussais's physiology has been executed. But Drs. Bell and La Roche have not restricted themselves to a mere translation of the author's text, together with a very able introduction, in which a succinct view is presented of the present state of physiology and pathology, particularly in reference to the improvements for which both are indebted to the labours of M. Broussais, the present edition is accompanied with a copious appendix, in which some of the views of the author are commented upon, and many additional facts are adduced as illustration of the doctrines advanced by him, or for the purpose of testing them by the labours of more recent investigators. The whole constitutes a very valuable addition, and will be consulted with profit by the student of medicine, as well as by that large class of practitioners whose want of facilities or of means prevents them from commanding the use of an extensive li-

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brary. The appendix contains a condensed view of the present state of our knowledge in relation to several points in physiology that have of late years engaged the attention of some of the ablest cultivators of the science, and which could scarcely be obtained from any other source. Thus articles E. and F. of the appendix, contain, the first, a highly interesting view of the opinions of Bell, Shaw, Bellingeri and others upon the fifth pair of nerves; and the second of the doctrines of Rolando, Philip, Allison, Brachet, and others of equal eminence, concerning the functions of the eighth pair. In these two articles the student will learn nearly all that is now known in relation to these two important portions of the nervous system, and in articles L. and M. we find an exposition of the discoveries of Mr. Charles Bell in regard to the nerves of sensation and of motion; and the nerves which he has termed irregular or respiratory. The information thus presented could only have been acquired by a reference to various publications, to which few students have ready access. We may say the same of article P. upon the cause of the perforations of the stomach after death.

The first article of the appendix is a criticism upon the author's views in reference to the general vital property of the tissues. This he considers to be merely contractility, but the editors deny that contractility can be the fundamental vital property of all the tissues, inasmuch as many of them do not evidence in the slightest degree the phenomenon characteristic of this property in its correct signification—viz. contraction. While, however, they refuse to admit the correctness of M. Broussais's views respecting the universality of the property of contraction, but at the same time maintain that the exercise of the vital property, whatever it may be, is not necessarily attended in all the tissues with contraction, at least so far as we are able to ascertain, they are far from coinciding with those physiologists who contend for the existence of a plurality of properties. "So far," they remark, "from entertaining such views, we believe that there is in truth but one general property of the tissues, which we would designate by the term irritability or excitability, and that sensibility, which some have elevated to an equal rank with the other, must be regarded as simply the effect of the exercise of a function." But after all that has been said upon this point, we believe that we have as yet arrived at no clear conception of the fundamental vital properties. The doctrine which refers the various functions of the tissues to the exercise of a single vital power, will be readily received by many, from its apparent simplicity. We are not persuaded; however, that its truth has been by any means satisfactorily demonstrated. Two properties appear to us to be necessary for the performance of most, if not all the vital functions; the one the capacity of perceiving the appropriate stimuli by which the particular tissue is excited to act, and the second the capacity of performing, in consequence of such perception, the actions for which the tissue is destined. Whatever name may be given to these properties, facts would appear to indicate that they are distinct from each other, and that individually they present very important modifications in different tissues.

The second article of the appendix notices certain figurative expressions made use of by the author of the treatise, and by which he renders himself liable to the very criticism which he has applied to similar modes of expression when employed by others. The censure which the translators have visited on

M. Broussais is merited, in consequence of his severe reprobation of the same error when committed by his predecessors and contemporaries. We must nevertheless admit that there is considerable difficulty, when treating of mere abstractions, to avoid an occasional indulgence in *ontological* language. What is particularly to be objected to, is not so much the "*ontologisms*," the phenomena of health and disease, when care has been taken to express clearly the dependance of these phenomena upon the normal or abnormal actions of the several organs, as in mistaking, as is too much the case with many physicians, even at the present day, the phenomena of health and disease, but especially the latter, for *entities*—in other words, for something entirely independent of, and even of acting upon and controlling the actions of material organs of the body. Thus we hear daily of fever invading and destroying an organ, of gout wandering through the system to locate itself upon the weaker parts, and of inflammation travelling or being driven from one organ to another. Upon such absurdities have pathological and therapeutical opinions been repeatedly founded.

The article of the appendix marked I. will be found a very able criticism upon some of the opinions advanced by M. Broussais in his chapter on the intellectual and moral faculties.

We are persuaded that the present edition will find its way into the hands of all who are not already in possession of an English translation of the work.

P. C.

XIV. *Handbuch der Anatomie des Menschlichen Körpers*. Von Dr. ANTON RÖMER, Sr. k. k. apostol. Majestät Rathe, Stabsfeldarzte, ordentlichem, öffentlichem, Professor der Anatomie an der k. k. Medicinisch-chirurgischen Josephs-Akademie, &c. &c. &c. Erster Band. pp. 308. Wien, 1831.

Manual of Human Anatomy. By Dr. ANTON RÖMER, Professor of Anatomy in the Imperial Joseph's Medico-chirurgical Academy, &c. &c. Vol. I. Vienna, 1831.

- It must be confessed that at the present time there is no scarcity of elementary treatises on anatomy; yet it must have fallen to the lot of most teachers of that subject to observe, that many of those which have been as yet published, abound in so many defects, both as regards arrangement and execution, as to render them unfit for the purposes for which they were intended, or of very limited utility to the student. Many have attempted to remedy these deficiencies, yet in most instances, if they have avoided the faults of their predecessors, they have committed others of equal magnitude, and have left the difficulty but slightly rectified. Every professor has, besides, his own peculiar views upon many points, and pursues an arrangement somewhat at variance with that adopted by others, so that to enable the student to derive full benefit from his instructions, it is almost indispensable that he should have a class-book drawn up in accordance with the order of his course. These are a few of the motives by which Dr. Römer has been actuated in undertaking the preparation of the work, the title of which we have announced above.

The first volume only has been as yet published. Besides some general definitions of the subject, it embraces the consideration of the several elements of the organization, or of general anatomy, and the description of the bones, liga-

ments, and muscles. The second volume, which is announced to appear in a short time, will embrace the consideration of the vessels, nerves, and viscera.

The author considers the ultimate arrangement of all the organized solids as consisting in an admixture of globules and a coagulable fluid. These, by various combinations and modifications, form the different tissues and organs. The tissues he enumerates in the following order:—1. The horny. 2. The cellular or mucous. 3. The serous. 4. The fibrous. 5. The cartilaginous. 6. The osseous. 7. The muscular. 8. The nervous. 9. The glandular. Each of these tissues is briefly described in the order in which they have been designated; but as these descriptions are drawn up with much brevity, they cannot, of course, furnish more than a general exposition of the properties of the different structures.

The bones and ligaments are considered under one division of the work, and are described with as much minuteness of detail as is necessary for the student. The order of their development is particularly designated, and the subject is frequently illustrated by inductions drawn from comparative anatomy. The same course is pursued in reference to the muscles, which are described with much clearness and precision. Appended to each subject treated of, is a select bibliography, consisting of an enumeration of the best sources of information. But what, in our opinion, constitutes the greatest merit in the plan of our author, and which distinguishes it from all others, is a reference, from every subject described, to the preparation in the great museum attached to the Joseph's Academy, by which it is illustrated. The numbers of the different preparations are placed at the foot of the page, so that the student is not only enabled to refer to that collection for a specimen of every object which he has to study, but is furnished, in Professor Römer's manual, with a complete descriptive catalogue of the museum. This plan cannot be too highly commended, and if more generally adopted, could not fail to throw open the rich treasures of the collections connected with many of our schools, which, for want of some means of reference and explanation, merely remain shut up as objects of curiosity, and a complete dead letter as regards utility. We sincerely trust, that the plan adopted by our author will be imitated by others. He has, we conceive, conferred an important benefit on all those who resort to the Joseph's Academy for anatomical instruction, and we should be much pleased to see the same advantages extended to those who visit our various institutions for the same object.

E. G.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *Hermaphroditism*.—M. RUDOLPH, in a memoir presented to the Academy of Sciences of Berlin, October 20th, 1825, describes a case of hermaphroditism of a very rare kind in the human species. It was met with in the body of a child, who had died, as it was said, seven days after birth, but the development would lead to the supposition of its being three months of age. The penis was divided inferiorly; the right side of the scrotum contained a testicle, the left side was small and empty. There was a uterus which communicated at its superior and left portion with a fallopian tube, behind which was an ovary destitute of its ligament. On the right side there was neither fallopian tube, nor ovary, nor ligaments, but a true testicle, from the epididymis of which there arose a vasa deferentia. Below the uterus there was a hard, flattened, ovoid body, which when divided exhibited a cavity with thick parietics. The uterus terminated above, in the parietes of this body, and at the right the vasa deferentia, without however penetrating into its cavity. Finally, at its inferior part there was a true vagina which terminated in a cul-de-sac. The urethra opened into the bladder, which was normal. The anus, rectum, and the other organs were naturally formed. M. Rudolphi considers the ovoid body, situated beneath the uterus, as the prostate and vesiculæ seminales in a rudimental state.

2. *Monstrosity*.—M. GROFFROY ST. HILAIRE announced to the Royal Academy of Medicine, at their meeting of the 23d of August last, that a monstrosity analogous to Ritta and Christina, but of the male sex, had been born at Vaison, department of Vaucluse.

PHYSIOLOGY.

3. *Extraordinary Abstinence*.—A curious instance of this is related in the *Mémorial Encyclopédique et Progressive des Connaissances Humaines*, for September last. The subject of the case was a farmer of Gaillac-Toubzac, arrondissement of Muret, named William Granié, thirty years of age, who murdered his wife on the 5th of April last, in the most brutal manner, and was imprisoned at Nur, where he murdered his bed-fellow. Granié was then transferred to the prison of Toulouse. On the 15th of April he determined to starve himself to death. On the 24th of April the first appearances of emaciation were perceived, and on the 29th he was affected with general tremors. On the 30th he had sufficient strength to break the padlock which fixed his hand-cuffs. On the 18th of May he was affected with violent oppression. The 6th of June deglu-

tition became difficult; the 12th the pulse was 89; the 17th violent convulsions occurred, which terminated this slow agony, which had continued for sixty-three days. During this interval G. only drank at intervals a little water, and sometimes his urine. Although taciturn in prison, he constantly answered to questions in such a manner as to remove all idea of mental derangement.

In our sixth volume, p. 543, will be found an account of a case in which a man lived on water for fifty-four days.

4. *Influence of the Mind over Disease.*—The following curious instance of this is related in the 30th Volume of *Rust's Magazin*, by Dr. MATTHEY, of Dantzic. A candidate in theology, affected with a double quartan fever, which had resisted the bark, was obliged to preach on a Sunday in a chapel at Dantzic. The thermometer, (Reaumur's,) was 20° below zero. The paroxysm of fever commenced some minutes before the preacher was to mount the pulpit; however, he could not avoid preaching, and employing all his powers to collect his ideas, and to master his voice, he completely subdued the fever, which did not subsequently reappear, and no evil effect followed.

5. *Sounds of the Heart.*—M. DESPINE has communicated to the Royal Academy of Medicine, an account of some experimental researches relative to the diagnosis of diseases of the heart, and of the circulation. These experiments have been repeated in presence of M. Andral, jr. to whom the memoir was referred by the Academy, and in his report, he states that M. Despine has established, 1st, that the first sound is produced by the contraction of the ventricles; 2d, that this first sound is succeeded by a momentary interval; 3d, that a second sound succeeds, which is not produced by the contraction of the auricles, but by the dilatation of the ventricles; an active expansion, during which the heart preserves its resistance, and by which the blood of the auricles is drawn into the cavities of the heart. (This proposition, however, M. Andral considers as only very probable; it cannot be confirmed except by direct observations in cases of diseases of the heart.) Finally, that the auricles in receiving or transmitting the blood, have only a vermicular motion, instead of contracting, and that if they perform any part in the projection of the blood into the ventricles, it is solely by their elasticity.

It also results from the experiments of M. Despine, that the first beating of the heart is simultaneous with that of those arteries only which are near the heart; but that in proportion as they are distant from the centre of the circulation, does the arterial expansion tend to become isochronous with the second sound of the heart. This result has been verified by M. Andral in many cases. —*Rev. Med. Oct. 1831.*

PATHOLOGY.

6. *On Inflammation of the Medullary Tissue of the long Bones.*—M. REYNAUD of Paris, the author of a paper which has just appeared with the preceding title, professes to have taken up the subject not so much with the view of giving a full treatise on it, as for the purpose of calling the attention of surgeons to a disease apparently of great frequency, and probably of much importance as the sequela of operations on the extremities. The reader may conceive the consequence attached by M. Reynaud to a thorough inquiry into all its relations, when it is added that in one of the great hospitals in the course of two years every case of amputation of the thigh proved fatal, and in every instance was inflammation of the medullary tissue of the remaining part of the thigh-bone found after death either singly or in conjunction with other morbid appearances.

The cases he has brought forward in illustration of the general principles which will be presently stated, are five in number; for, with a considerate atten-

tion to his reader's leisure and patience, not often met with among French pathological writers of the present day, he informs us that the numerous additional cases he might have likewise detailed would not enable him to go further in his inferences, or to explain better the phenomena of the disease, than the examples which he has published, and of which we shall communicate the following short analysis.—*Case I.* The first he considers an illustrative example of the inflammatory state of the medullary tissue in its lowest degree, such as is necessary to the production of callus on the end of the divided bone after amputation. The patient was a young man, whose arm was removed by M. Roux on account of extensive disease of the elbow-joint. The operation was short, two ligatures only were applied, the stump next morning had healed by the first intention, and in a short time the ligatures came away, and cicatrization was completed. The patient nevertheless continued languid, depressed and feverish; in a few days the left thigh and leg became painful and doughy; the right knee then became enlarged and obviously contained fluid; the fever in the meantime increased, and dry tongue, total prostration, and slight delirium ushered in death. On dissection there was found great serous infiltration of the left thigh, a little pus at the upper part of the tibia, the saphæna vein thickened and red, and containing pus, the crural vein obliterated by a clot resembling in colour and consistence thick chocolate; purulent effusion into the right knee-joint, with redness of the synovial membrane; bloody injection of the dura-matral arachnoid with a very thin layer of purulent-like effusion and serous infiltration of the pia mater; a fatty state of the liver. On examining the stump, the cicatrix was found firm, except at a small point only; a semi-fibrous layer rested on the end of the bone, firmest next the bone, and forming a plug over the medullary canal; around the edge of the bone a ring of bony matter was formed, and a smaller bony ring was also formed on the edge of the medullary canal; almost the whole medullary membrane of the bone was of a reddish-brown colour; the periosteum was healthy; clots of blood were found in the sub-scapular veins, where they end in the axillary vein; but the other veins, as well as the artery, presented a natural appearance.—*Case II.* The next is an instance of inflammation of the crural vein after amputation of the thigh, where the medullary tissue was found in a state of more advanced inflammation. The particulars of the case before death are not given; it is merely observed that amputation was performed on account of a chronic disease of the knee-joint, and that the patient died in thirty days. On dissection, there was found thin effusion of flaky pus on the arachnoid; numerous purulent points dispersed throughout the substance of the brain; a few tubercles in the lungs; a purulent cavity in the spleen; the crural vein of the stump inflamed; the end of the bone denuded of its periosteum to a short distance upwards; the medullary tissue inflamed and purulent as high up as the separation of periosteum externally, and a considerable portion of the rest of it redder, denser, and less oily than natural.—*Case III.* This is an extremely interesting example of advanced inflammation of the whole medullary tissue of the bone. The patient, a lad, sixteen years of age, had a curved leg and slight disease of the knee-joint; and, together with his parents, insisted on having amputation performed to rid him of the incumbrance, although the surgeons of the hospital were averse to it. M. Boyer therefore amputated the limb at the usual situation above the knee-joint, and dressed the stump in the old French method. Every thing went on prosperously till the sixth day, on the morning of which M. Reynaud found him sitting in bed making caddis; but in the evening the countenance became yellow; delirium ensued during the night and also diarrrhœa; on the ninth day, the upper part of the thigh was much swelled, and on squeezing it, pus flowed profusely from the wound; acute pain in the stomach, hurried respiration, a short cough, fever, increased yellowness of the skin, and yellow tinging of all the secretions rapidly followed; and death took place on the tenth day. On dissection, the dura mater was found yellowish, and covered internally with a thin layer of lymph; a sero-purulent fluid was effused into the left pleural cavity; and the lungs were inflamed and infiltrated

with pus. The veins proceeding from the stump were inflamed and contained pus as high up as the iliacs; the muscles near the flaps were infiltrated with a sero-gelatinous fluid; the periosteum was detached from the bone as high up as the greater trochanter; the bone was yellowish and surrounded by pus. The medullary tissue was inflamed and in a state of suppuration up to the very termination of the medullary canal.—*Case IV.* Is an instance of extensive inflammation of the medullary tissue, without any other material diseased appearance in the body. Amputation of the thigh was performed by M. Roux on account of an old inveterate disease of the knee-joint; the stump was dressed so as to heal by the first intention; and for fifteen days nothing occurred to disturb recovery. But then the stump became painful, the patient complained of the dressings being always too tight, and was very restless; subsequently strong fever set in, the breathing became frequent, and death supervened, without any particular symptom referable to the stump, except increasing and extreme tenderness, with diminution of the discharge. The appearances found on dissection were confined to the limb operated on. The soft parts were united except at one point, where there was an opening down to a purulent cavity round the end of the bone. The bone was denuded of its periosteum two inches up in front, and half an inch higher behind; above this it adhered to a thin layer of recently-formed bone; and still higher it was still connected with the original bone, but more loosely than usual, and without any appearance of uniting vessels when it was stripped off. The extremity of the medullary tissue formed a brownish-white, spongy mass, infiltrated with pus, and plugging up the cavity in the bone; above this plug there was a purulent cavity extending as high as the level of the trochanter—the pus lying in contact with the bone posteriorly, but separated from it anteriorly by a layer of tissue infiltrated with pus: and the cavity communicated outwardly by a small aperture. The cells of the spongy tissue of the bone above the medullary cavity were lined by a deep red membrane, and filled with pus. The pus was every where very fetid. The substance of the bone was unusually thick in front and thin before; its outer surface, instead of being smooth, shining, moist, and slightly rosy, was dry, white, and dull; and its texture, as seen when it was broken across, appeared unusually white, and presented none of the red spots which are seen in a healthy bone after the laceration of its connecting blood-vessels.—*Case V.* Is a similar instance of very extensive and advanced inflammation of the medullary tissue, united with various other morbid appearances. Amputation was performed on account of white swelling of the knee-joint. An attempt to heal the stump by the first intention failed; and profuse suppuration took place; but methodical compression gradually produced almost complete union. From the second day, however, violent fever set in, cough with thick expectoration followed, diarrhoea next appeared, and then yellowness of the skin before death. On dissection, the dura mater was found yellowish in colour, and lined internally by a pseudo-membranous effusion; the left lung in the incipient stage of carnification, the right much gorged and a purulent cavity at its base; and the pericardium containing some serum and a thin layer of lymph on both its surfaces. The flaps of the stump adhered partially. There was a purulent cavity at the end of the bone. The femoral artery contained pus towards its divided extremity. The femoral vein was throughout its whole course thickened, surrounded with brittle cellular tissue, lined with a pseudo-membrane internally, and filled with pus. The end of the bone was denuded of its periosteum to a short distance upwards; and the rest of this membrane was more easily stripped off than usual; but the surface and internal structure of the bone, except just at its extremity where the periosteum had been separated, was of the natural smoothness and redness. The lower end of the medullary tissue was prominent, black, and purulent, and it was in a state of fetid suppuration throughout the whole cavity of the bone.

In the general summary with which M. Reynaud concludes his paper, he observes that the frequency with which inflammation of the medullary tissue has been met with in the long-bones after amputation, shows that there is some

connexion between the disease and the injury done to this tissue by the saw; and he therefore throws out the hint whether it is not advisable to use some precautions for rendering the incision through the cavity of the bone smoother than it is commonly made, and likewise to cover it more closely with the soft parts of the flap. He considers himself justified in inferring from his cases, that the stripping of the periosteum from the bone is produced by an advanced state of inflammation of the medullary tissue, and that the extent of the one is generally conformable with that of the other. He is not satisfied he is yet able to point out the symptoms of the disease he describes, but says he would be inclined to suspect it wherever there is a general doughiness of the stump without external redness or other signs of inflammation—when a large quantity of matter may be squeezed out of the stump, which cannot be accounted for from the extent of the remaining sore—when there is acute, deep-seated pain, felt during the first dressings, and accompanied with extreme tenderness of the stump—and when there is yellowness of the stump, acidity of the breath, and general fever.

There appears little doubt that the subject of the author's paper has not hitherto been sufficiently attended to by surgeons, and is deserving of more notice. Some allusion to it has been made by M. Ribes, in the article *Necrosis* in the *Dictionnaire des Sciences Médicales*, and more lately by M. Blandin in the article *Amputation* in the *Dictionnaire de Médecine et de Chirurgie Pratiques*.—*Ed. Med. and Surg. Journ. Oct. and Archives Générales, June, 1831.*

7. *Tetanus from Inflammation of Spinal Cord.*—An interesting case of this is related by M. COMBETTE in the *Archives Générales*, for June last. The subject of it was a healthy elderly woman, accustomed to field labour. She was seized without any apparent cause with acute pain in the loins, and along the back, and almost immediately afterwards with a general and extreme rigidity, by which she was deprived of the use of her limbs. Five days afterwards she was admitted into the hospital St. Antoine, at which time there was a general contraction of the muscles, semiflexion of the forearms, with extreme difficulty in extending them, extension of the limbs with impossibility of bending them, constant closure of the jaw, extreme difficulty and pain in speaking, difficult deglutition, redness of the features, suffusion of the eyes, fullness and hardness of the pulse, considerable frequency and some labour of respiration, and perfect preservation of consciousness. She was immediately and freely bled. Next morning her state was unaltered; and she screamed aloud when she was touched or any attempt was made to move her. The blood was buffy. Stimulant draughts were now given, with a drachm of laudanum, blood was withdrawn from the loins by cupping, cataplasms were applied to the back, and opiate friction used over the body generally. In the evening no change had taken place except that deglutition had become much more difficult. At midnight the breathing was laborious and accompanied with mucous rattle and frothing at the mouth. Sopor now appeared, interrupted, however, by screams when she was meddled with. The pulse continuing full and strong, and the countenance flushed, she was again freely bled, after which she expressed herself relieved. Her attendant then urged her to take one of her draughts, which she was very unwilling to do; she at length yielded; but immediately the contractions were much increased, violent convulsions ensued, and in this state she expired.

On dissection thirty hours after death, there was found great rigidity of the extremities; vascularity of the cerebral membranes, and somewhat more redness of the cerebral texture than is natural; much serum in the canal of the spine; the spinal membranes, and particularly the inside of the dura mater, of a bright rose-red colour; the surface of the cord covered with a network of vessels; softening of the anterior part of the cord, so as to present no resistance to the knife, and to form indeed throughout its whole length, a soft semi-liquid pulp of a lively rose colour, especially in the cervical and lumbar regions, where some spots of extravasation were also seen; no deviation from the

healthy state in the posterior part of the cord; no particular appearance at the origins of the anterior or posterior nerves; the pneumogastric nerves and cervical ganglions of the sympathetic nerve in a healthy state; the lungs gorged, especially at their base and posteriorly; the mucous membrane of the stomach of a pale yellow tint, with some red points here and there; the other internal viscera healthy.

8. *Small-Pox*.—During the last eighteen months M. LOUIS has had the opportunity of examining the bodies of fifteen patients who died of small-pox. In eleven of these he found in the bronchia either a false membrane, or a collection of pus or blood. In one-third of the cases there was a morbid development of the glands of Brunner forming exanthematous pustules. In no case were the elliptical plates altered.—*Gazette Médicale*, June 25th, 1831.

9. *Cysts in the Heart*.—M. FLANDIN exhibited to the Anatomical Society of Paris, at their meeting on the 6th of July last, a heart, in the left ventricle of which were cysts containing clots of blood, and the centre of these clots was filled with pus.—*Revue Méd. August*, 1831.

10. *Pustules in the Intestines caused by the internal administration of Tartar Emetic*.—M. GUERARD says that he has met with, in two persons treated by large doses of tartar emetic, pustules similar to those produced on the skin by the application to it of that article. These pustules occupied a considerable portion of the intestinal canal; there existed besides no sign of dothineritis. The stomach was healthy.—*Ibid*.

11. *Co-existence of Mumps with Leucorrhæal Discharge*.—MR. JOHN DUNN relates in the *North of England Medical and Surgical Journal*, for June last, four cases in which inflammation of the vagina and purulent discharge followed mumps. The first case occurred in a child two and a half years old, the second in a child of four years of age, and the other two were servants. The children neither slept with each other or with either of the servants.

12. *Partial Aneurism of the Heart?*—M. VIDAL has exhibited to the Anatomical Society of Paris, the heart of an old woman, with a small tumour near the apex of the right ventricle. This tumour communicated with the cavity of the ventricle by a small orifice: it is lined with an organized membrane continuous with that of the heart. It contained recently coagulated blood. The disease was not suspected. The patient died with what are termed asthmatic symptoms.—*Journal Universel et Hebdom. April*, 1831.

MATERIA MEDICA AND PHARMACY.

13. *Properties and Therapeutic Uses of Potatoes*.—M. NAUCHE has instituted a number of experiments with the potatoe, and ascertained, he says, that this vegetable possesses in a moderate dose a laxative property; this property, he says, exists in a higher degree in the white than in the other kinds of potatoe. The reason of this quality not being previously observed is, that it entirely disappears when the plant is cooked; to preserve it, the potatoe must be subjected only to infusion, or at most very slightly boiled.

This vegetable also exercises a manifest action on the kidneys; it powerfully augments the secretion of urine, and gives to that liquid a peculiar slightly ammoniacal odour; it renders the urine also clearer alkaline, and causes the disappearance of the pulverulent and flocculent deposit, which are so often formed in the urine, and which are produced by the excess of acid.

It acts with equal power upon the liver causing an increased secretion of bile.

It also appears slightly to excite the cerebral and nervous systems, and nevertheless to produce a sedative effect in respect to their action. It produces heat and smarting in the skin and acts upon it both as stimulant and astringent; this last action is particularly observable in the red potatoe.

M. Nauche says that he has employed this therapeutic agent with advantage in chronic affections of the mucous membranes, and he has frequently cured scurvy with it. But he has used it with the greatest benefit in cases of gravel, when the patient passed fine sand or small gravel formed of uric acid. Finally, he says he has derived advantage from it in organic lesions of the heart and in dropsy.

M. N. employs this vegetable most frequently in the form of decoction; if he wishes it to act powerfully on the liver, the intestinal canal, and kidneys, he uses a simple infusion. He frequently employs it cut in small pieces or grated, and added to foot-baths, as a substitute for mustard, and mixes it with ground flaxseed to form a stimulating cataplasm.—*Gazette Médicale*, Sept. 24, 1831.

14. *On the Therapeutic properties of the Ava root.*—We find in *Captain Beechey's Narrative of a Voyage to the Pacific*, the following interesting extract from the journal of Mr. COLLIE, surgeon of the Blossom, relative to the effects of the Ava, a root formerly in much use in the Pacific. The intoxicating property of this root, the cutaneous eruption which succeeds its use, and the renovating effects it appears to have upon the constitution, has been noticed ever since the discovery of the Society Islands. Mr. Collie observes that—"a course of it is most beneficial in renovating constitutions which have been worn out by hard living, long residence in warm climates, without, however, affections of the liver, and by protracted chronic diseases, more especially if the disorders be such as by the humoral pathologists would be attributed to an attenuated or acrid state of the blood." He had an opportunity of seeing "a gentleman, a foreigner, who had undergone a course of it to remove a cutaneous affection said to have been similar to St. Anthony's fire. It had affected at different times almost every part of the body, going from one place to another, but had been particularly obstinate in one leg. He took two doses a day of half a pint each, one before breakfast and one before dinner, by which his appetite was sharpened; and by the time he had finished his meal a most pleasing state of half intoxication had come on, so that he was just able to go to his couch, where he enjoyed a sound and refreshing sleep.

"About the second or third week, the eyes became suffused with blood, and the cuticle around them began to scale, when the whole surface of the body assumed the appearance above described. The first dose is continued for a week or so, according to the disease, and then gradually left off. The skin clears at the same time, and the whole system is highly benefited.

"I recommended the ava, and had an opportunity of seeing the first effects upon a man affected with chronic superficial ulceration, affecting the greater part of the toes, and the anterior part of the soles of the feet. The legs and feet were œdematous and swelled; the pain was very distressing, preventing any sound repose, and not permitting him even to lie down or bring them up, so as to be near a line horizontal with the body. The ulcers were covered with a tough, viscid, dark-coloured discharge that adhered to the surface, and entirely concealed it. His frame was emaciated, pulse quick and irritable, appetite gone, tongue dry and reddish; he had taken mercurial preparations at two previous periods, as he said, with considerable benefit; but for want of the medicines it was stopped; when the sores were nearly healed. He had been, and I believe still was, addicted to drinking spirituous liquors. The ava was given three times a day with the same immediate effects as before-mentioned, and at the end of ten days the ulcers were clean and healing. From the commencement of the course he had been able to lie down, allowing his feet to hang over the

bed-side: he had slept soundly, and his appetite was good. Could he have procured and applied a suitable dressing for the ulcers, with appropriate support to the oedematous extremities, I have no hesitation in saying that the plan would have succeeded. Even with all these disadvantages, I am inclined to believe that a cure will be effected if he abstains from liquor."

15. *Experiments on Conium Maculatum.* By R. BATTLETT.—No. 1. The whole of the colouring matter and aromatic properties were discharged from one ounce of the leaves of conium, (dried at a temperature of 120 degrees,) by two macerations in rectified spirit of wine, each for twenty-four hours. The decanted spirit was gently distilled, and left seventy-eight grains of resinous matter, *partaking highly of the aromatic properties of the plant.* A drachm of the resinous matter having been incinerated, the ashes were boiled in water; nitrate of silver was added, and a precipitate ensued, which, being submitted to the action of the blow-pipe, two grains and a half of silver were revived, showing the presence of two grains of muriatic acid. The ashes remaining, (nearly the whole,) were then boiled in water acidulated with nitric acid, chloro-prussiate of potash was added to the liquor, and the presence of iron was shewn by a slight blue colour. The leaves originally acted upon by the spirit of wine weighed, when re-dried, six drachms, six grains—loss thirty-six grains. They were incinerated, and the ashes having been boiled in water, a solution of nitrate of silver was added. A precipitate ensued, and the revived silver weighed four grains. The residuum of these ashes, boiled in water acidulated with nitric acid, chloro-prussiate of potash being added to the solution, a very slight blue colour was produced.

No. 2.—Nearly the whole of the colouring matter and aromatic properties were taken up by two similar macerations in *proof spirit*, (each twenty-four hours.) The spirit, after standing some hours, changed gradually to a yellow colour, and a precipitation of green flocks ensued, which, when dried, weighed eight grains. The precipitate was wholly dissolved by rectified spirit, imparting to it a green colour, but not much of the aromatic flavour. The liquid from which the eight grains were separated being distilled, yielded four drachms, ten grains of extract, tasting strongly of the conium.

The re-dried leaves, weighing three drachms, fifteen grains, not being wholly deprived of their colour, were incinerated, and the ashes boiled in water. Nitrate of silver was added, *but no precipitation ensued.* Having been then boiled in water, acidulated with nitric acid, and chloro-prussiate of potash being added, a slight blue colour was produced.

No. 3.—Four ounces of the dried leaves were incinerated, the ashes were boiled in three separate portions of water; the three portions were then mixed and evaporated to dryness. Thirty-eight grains of saline matter remained, which having been again dissolved in water, nitrate of silver was added so long as any precipitate ensued: the silver revived from this, weighing seventeen grains, showing the presence of fifteen grains or thereabouts, of muriatic acid. The addition afterwards of a few drops of nitrate of barytes, to the same liquid, produced a slight degree of cloudiness.

The residuum of the ashes, (being about one-half,) was boiled in water acidulated with nitric acid, and chloro-prussiate of potash being added, a very slight blue colour was produced. Oxalate of ammonia effected no change.

The tests above-mentioned show the presence of muriate of soda, in considerable quantity, a very small portion of sulphate of soda, and a trace of iron.

No. 4.—Six gallons of the juice (14lbs. yielded about a gallon,) in a temperature of 100 degrees, lost its green colour, the green matter separating in flocks and floating on the surface. This being collected and dried on filtering paper, at a gentle heat, weighed five ounces, one drachm, thirty-six grains, which, being pulverized, was macerated in cold spirit of wine so long as it imparted any colour. It was then nearly exhausted of the remaining colouring matter, by boiling in spirit of wine. The spirit, upon careful distillation by

the most gentle heat, gave one ounce, four drachms, thirty grains, of resinous matter, *tasting and smelling very strongly of the plant*. The refuse from the green resinous matter, subjected to the spirit of wine, when re-dried, weighed three ounces, one drachm, thirty grains; having lost three drachms, thirty-six grains. The spirit had a slight flavour of the conium, but not sufficient to warrant the supposition that three drachms, thirty-six grains, could have been held in solution by it. In two or three weeks the spirit deposited a white flocculent matter, which, on being separated from the spirit and dried, weighed two grains. It possessed the taste and smell of the plant; did not burn on the application of flame.

The resinous matter from which the spirit had been separated by distillation, was very pungent, smelling and tasting most sensibly of the plant. It nearly volatilized in a strong heat, leaving only a small portion of muriate of soda, amounting to about $2\frac{1}{2}$ grains from the drachm. During the combustion, the smell of conium was most perceptible. The refuse from the green matter which had been nearly exhausted of colour by repeated macerations in spirit of wine, was incinerated, and the ashes were boiled in distilled water. On the addition of nitrate of silver to this solution, the slightest cloudiness only ensued. The ashes being boiled in water acidulated with nitric acid, and chloro-prussiate of potash being added, a very slight blue colour was observed.

No. 5.—The juice from which the green matter had been separated, (No. 4,) was carefully distilled to three pints. The first gallon that came over tasted a good deal of the conium, and there appeared to be a small quantity of essential oil floating on the surface. The second gallon had considerably less flavour, and in the three last, scarcely any smell or taste was perceptible. In about fourteen days a white flocculent separation appeared in the liquor of the first gallon, and on examination it appeared to be the same as that which precipitated from the distilled spirit, (No. 4;) the essential oil had disappeared, and the water had comparatively little smell or taste. The three pints of thick liquor remaining in the still were evaporated on a water-bath, to the consistence of an extract, which weighed $1\frac{1}{2}$ lbs., having scarcely any smell or taste of the conium.

Four ounces of this extract were incinerated, and the ashes were boiled in three successive portions of water, the three quantities of water were mixed and evaporated, leaving fifty-six grains of saline matter, which were re-dissolved in water: nitrate of barytes being added to the solution, a precipitate ensued, which when dried weighed two grains. Nitrate of silver was then added to the same liquor, and a copious white precipitate appeared. The silver being revived from this precipitate, weighed twenty grains, proving the presence of seventeen grains of muriatic acid. The ashes remaining were boiled in water acidulated with nitric acid, and chloro-prussiate of potash being added, a slight blue precipitate ensued. Oxalate of ammonia produced no change.

These experiments show that the plant contains;—

Much extractive matter, containing little medicinal property;—

Green resinous matter, possessing a highly-volatile principle, on which the active medicinal property of the plant appears to depend;—

Muriate of soda in considerable quantity;—

Sulphate of soda in small proportion;—

Iron in the proportion of about five grains to a hundred weight of the fresh plant.

The medicinal properties being thus evidently contained in the green resinous matter, the question arises in what form it can be most beneficially administered. The present mode of preparing the extract, by evaporating the expressed juice till it acquires a proper consistence, is obviously defective, and upon attentive consideration it will be seen that the green resinous matter, when once separated from the juice, cannot be again intimately combined with the extractive matter; and that evaporation at a temperature exceeding 120 degrees, volatilizes the principle on which the power of the plant appears to depend,

(Nos. 1, 2, and 4.) Hence the irregular action and uncertain effect of the medicine, as now prepared; and it follows that the preparation No. 2, 'by proof spirit, procured from the leaves dried at not more than 120 degrees, or the powder, is the best form.—*Lond. Med. Gaz. July, 1831.*

PRACTICE OF MEDICINE.

16. *Case of Arthritis and Sciatica treated by Acupuncture with Complete success.*—The following case is interesting and well related, and the remarks on it judicious and highly creditable to the author, Mr. JOHN HAMILTON, one of the pupils of the Meath Hospital, Dublin. In that institution, Dr. Graves has introduced the plan of entrusting to each student a certain number of cases of which he has charge. The history and daily reports of these cases are to be taken by him, and the diagnosis, prognosis, and mode of treatment are to emanate from himself, subject always to the corrections and emendations of the physician, who thus, in his daily visit to the patients, acts in a consulting capacity. Every new case, or every change in the symptoms of a case, calls for a new examination and discussion between the physician and pupil, and the result is highly beneficial to all parties concerned, but especially to the pupil, who is in this way taught to think for himself, and to compare disease, as it is really met with, with the description given in books. His attention is directed to the acquisition of facts, and he learns that accuracy of examination which is so essential a qualification of the physician. The case about to be related is extracted from a clinical report to which the first clinical prize was adjudged. When a similar plan of instruction shall be introduced into our hospitals, we may hope to receive from the pupils of those institutions, equally able reports of the cases therein treated. At present there is something radically wrong in the management of our hospitals, which prevents that portion of the public who support these establishments from receiving any advantage from them.

CASE.—Pat. Rosseter, æt. 30, labourer, was admitted into the Meath Hospital, at Dublin, Nov. 30, 1830. He complains of pain on motion, and stiffness of both arms and wrists, not very severe, nor very tender on pressure; also severe pain on motion a little behind and above the left hip-joint. He walks lamely and with difficulty, not being able to move the thigh, or put his foot firmly to the ground without great pain. The knees are slightly stiff and painful. None of these parts are red or swollen, and do not give pain while the man remains at rest. They are not worse at night. He attributes them to cold caught from exposure while in a profuse sweat, after a hard day's work, six weeks ago. At first a chilliness came on, and continued for a week, when the shoulders and arms became affected, and for a short time the front of the chest very severely. The pains were erratic, but did not attack the hip and knees till ten days since. Since this attack he sweats often and feels chilly. Bowels regular; appetite and sleep good: pulse full and regular; urine clear and deposits no sediment.

3d. In addition to his other symptoms a slight attack of pleurodyny.—R. Vinum sem. colchici, ʒss.; magnesie, gr. x.; gutta nig. gt. viij.; aqua cinnam. ʒj. M. sumat ter in die. Hir. vi. lateri; *Acupuncture* at the affected part of left hip.

4th. The needle was pushed in, with considerable pain to the patient, up to the eye, in an obliquely horizontal direction, a few inches above and behind the trochanter, about where the sciatic nerve leaves the pelvis. It was withdrawn after being in twenty-four hours. While in, the part felt sore. Though watched some minutes after its insertion, I could not observe any action to be produced; the patient himself observed that he felt it moved. He considers that it has done him good, the pain and tenderness being considerably lessened. His chief cause of complaint now is the left wrist, which is stiff and painful; bowels confined; urine high-coloured, but clear.—Rep. Mist. Colch. *Re conti-*

qued on the use of the colch.; sulph. mag. being added merely on one occasion, to open the bowels.

8th. All his pains much less, and can walk with comparative ease and very little pain to what he had when he came into the hospital; is desirous of having another needle inserted, having experienced so much benefit from the first.—Cont. Colch.

9th. Pain in the hip returning; the patient is very anxious to have another needle inserted. His other pains less.—Rep. Acupunct. et Mist. Colch.

11th. The needle was withdrawn, leaving some degree of soreness; his other pains are so trifling that this is almost his only complaint.—Omit. colch. et summat sulph. guiniaz, gr. x.

13th. Has now no pain any where, and walks extremely well, without the least stiffness or pain.

Remarks.—Although colchicum was taken during the use of the needles, it is evident very little influence can be attributed to this medicine in alleviating the pain in the hip. For though by its means the cure of the other pains was effected, this one, after having been greatly relieved by the first needle, began again to be severe, while the patient was still using colchicum; and a second needle was inserted, at the man's anxious request, with complete relief.

Besides this case, I have seen acupuncturation successful in three others: the first that of Hogan, admitted Sept. 30th, 1830. This man had laboured under inflammation of the anterior crural nerve for two years, and had undergone medical treatment without relief. Four needles were now inserted at intervals; and at the end of a week he was dismissed cured. It is proper to add, that for two days he used Dover's powder and the warm bath. The second, John Darnford, under Mr. Jones's care, had laboured four months under pain of the hip, with some degree of lameness, and had used blisters and cupping without relief. The second day after admission, two needles having been inserted into the hip, all pain was removed from that part, and he could walk about perfectly well, his only complaint being a pain in the ankle. The last is that of James Toole, in whom one needle removed severe pain into the hip. This patient is under Mr. Bernard's care.

Much talent and ingenuity have been vainly exercised to discover the *modus operandi* of the needle while in the living fibre; any attempt, therefore, on my part, could only end in idle speculation. I trust, however, I shall be excused for venturing to offer a few remarks of a more practical nature; first, on the best manner of inserting the needles; secondly, on the number that should be employed, and the length of time they are to be left in; and thirdly, on those cases of a rheumatic character in which they are likely to be the most beneficial.

1st. It may be observed, that of the above four cases, the two last were much the most striking: the cure occupying only two days in the cases of Darnford and Toole. Many reasons might be brought forward as likely to account for this: the circumstances of the cases, &c. I am inclined, however, to attribute the speedy success of the remedy in a great measure to the different manner in which the needles were inserted. In Darnford's case, Dr. Graves desired the direction of the second needle to be less horizontal, and the next day all pain was removed. In Toole's case, the needle used was so long, and the direction such, as to render it probable that the sciatic nerve was pierced, (which Cloquet, I understand, for I could not get his book, considers desirable;) the relief was even more speedy.

In Dr. Renton's hands, acupuncturation has been eminently successful, instantaneous cures having been effected in many cases of long standing and severity, and which had resisted all the other remedies employed. It is difficult to collect from his paper in the Edinburgh Med. and Surg. Journal the precise manner in which he performed the operation. The direction of the needle, however, appears to have been perpendicular, or nearly so, as he lays great stress on the piercing of the muscular fibre, and passes the needle, not up to

the eye, but only to the depth of an inch, or an inch and a half, which, were the direction nearly horizontal, would scarcely be deep enough to attain his object. This much is certain, that it was done with a gentle rotatory motion, nor was any pain produced by the insertion of so many as ten needles.

Wishing to satisfy myself on this last head—the absence of pain—I inserted a needle into the centre of the calf of my leg, with a rotatory motion firmly pressing on the top, and about the depth of an inch and a half, the direction being exactly perpendicular. No *pain* was felt; the only feeling being one of great itching. What is curious is, that the needle, after having been in a minute, moved in a circular direction on its own axis; and a numb, aching sensation was experienced. It was only left in a couple of minutes, and then withdrawn with some pain and difficulty, as if it had been firmly grasped by the muscular fibres. The leg was the same after as before, and the place of the puncture discovered with difficulty. Now, as pain has not been proved to be necessary to the efficacy of acupuncture, but will often be a great obstacle to its use in cases where it would be likely to prove a safe, speedy, and efficacious remedy, the insertion of the needle by a rotatory motion—drilling, as it were—being unattended by any pain, must be considered preferable to thrusting it in, a mode which, from Pat. Rosseter's case, we may conceive to be a very painful operation. Dr. Renton's cases, along with the two above mentioned, would also go far to prove, that the more perpendicular the direction the better, in which case, too, the depth ought to be from an inch to an inch and a half.

With regard to the second point, the number of needles, and the time they are to remain in, there exists great difference of opinion. It is natural to suppose, that if one needle produces any effect, a more powerful one may be produced by many, which is in a great measure confirmed by the great success obtained by Dr. Renton, who used as many as ten in some instances, divided between the hip, thigh, and leg. Dr. Elliotson also uses a considerable number. The former gentleman only allowed them to remain in five or ten minutes; and how he succeeded has been already mentioned. On the other hand, in the Meath, they are left in twenty-four hours; and Dr. Elliotson, in one of his clinical lectures, observes that "if needles be merely thrust in, and allowed to remain only a short time, they will in general not be found of much service; they should be left in at least two hours." It is not easy to reconcile these differences. Most probably more depends on the manner of performing acupuncture than on any thing else, that the shorter time they are in the benefit should prove to be the greater. If the manner be good, it very likely matters little whether the needles remain in five minutes, or twenty-four hours, as far as the effect is concerned; but it is of great consequence as regards the patient's comfort, who would no doubt sleep better without, than with, nine or ten needles sticking in his body, setting aside the soreness which usually remains after a needle has been in so long. Dr. Elliotson, in spite of having discovered the value of leaving needles in long, appears in some cases to have had more perseverance than success, as he says, "I once ordered them daily for nine days before I succeeded." If this, and some other cases given by Dr. Elliotson, are compared with Dr. Renton's, it will be apparent that the remedy must have been differently applied. If performed in Dr. Renton's manner—that is, with half the needle out of the flesh, it is plain it would not be convenient to leave them in long; it is fortunate that there is no necessity, five or ten minutes having proved sufficient.

Lastly, Dr. Elliotson, in considering the cases most likely to be benefited by acupuncture, divides rheumatism into that attended with a sense of heat, and aggravated by its application; and that in which there is a feeling of coldness, the pain being relieved by warmth. The first of these he judges not likely to be benefited by the use of needles, but in the latter he thinks they will be found to prove very serviceable. But this distinction does not appear to have been acted on by Dr. Renton, as the case of the young woman given by him proves; nor do I recollect it to have been mentioned by Dr. Graves. It

is doubtful, therefore, how far it can be considered of importance; and it would probably be better to give the needles a fair trial in all cases of sciatica.—*Lond. Med. Gaz. July, 1831.*

17. *Neuralgia successfully treated with the Cyanuret of Potassium.*—Dr. LOMBARD, of Geneva, has employed the cyanuret of potassium with success in the treatment of several cases of neuralgia. Dr. L. applies it by friction; he uses a watery solution in an ointment, according to circumstances. The watery solution is of the strength of from one to four grains to the ounce of water, and the ointment is composed of from two to four grains of the salt to an ounce of lard. The aqueous solution he considers in general, the most prompt in its effects.

CASE I. *Facial Neuralgia instantaneously cured by the Hydrocyanate of Potash in Friction.*—A lady, of robust habit, forty-nine years of age, was a martyr to the most agonizing occasional attacks of pain in the space between the temporal region and the ciliary arch and maxilla. She used to scream violently in these torturing accessions, and sometimes lost all appearance of sensibility to such a degree that she has been supposed to be struck with apoplexy. Pulse 84; face rather flushed; no functional derangement. She was ordered to be rubbed with the aqueous solution, containing sixteen grains of cyanuret of potassium in four ounces of distilled water: it was rubbed on the forehead and cheek with a ball of cotton. The pain gave way almost instantaneously at the very first application, and seemed, as the patient said, to be rubbed away with the hand. A complete cure was effected by persevering a little while in the use of the remedy.

CASE II. *Periodic Neuralgia removed by the Ointment of the Cyanuret.*—The cure in this instance was less prompt, but not less certain. A lady, thirty-eight years of age, experienced the severest pains in the temporal region and upper jaw of the left side: they came on regularly every morning at four o'clock; went on increasing in severity until about ten, and did not cease till four in the afternoon. In that interval she laboured under anorexia, fever, head-ache, &c. and was almost driven distracted. She was bled to twelve ounces to relieve congestion, and then the ointment was applied to the cheek and temple. Two grains to the half ounce of lard were at first employed, but the improvement was more rapid under the application of ten grains to two ounces. Lotions of the cyanuret were eventually used, and the cure was complete.

CASE III. *Facial Neuralgia almost immediately cured.*—A lady, twenty years of age, suffered for several days, at the same hour, the most torturing pains in the orbital and supra-maxillary regions. Her face was much flushed, particularly on the affected side. Ten grains of the cyanuret were dissolved in four ounces of distilled water, and rubbed on with cotton. The application was quite successful.

CASE IV. *Chronic Occasional Neuralgia similarly treated.*—A woman, of eighty, who had long suffered from irregular attacks of this complaint, was cured by lotions and frictions, compounded pretty strongly, and continued for some time.

The cyanuret of potassium is contra-indicated where the nervous affection is complicated with inflammatory action, discharge, &c. It is a useful remedy in non-inflammatory rheumatism.

In sciatic neuralgia it has not been successful—nay, it has been necessarily discontinued, on account of some unpleasant accidents which it occasioned.

In white swelling, attended with acute pain, poultices moistened with the solution had the effect of producing much comfort, though the continuance of their application had no promise of amendment in it.

It is on the whole inferred that the calming properties of this remedy are superior to those of any other known, and that it should always have a preference where inflammation does not exist. Lotions, with hydrocyanic acid, are by no means to be compared with it, for the acid is decomposed with facility, and scarcely to be used without danger.

The first application of the cyanuret in the above way is claimed by M. Buttigny and his brethren of Geneva, but it is disputed with them by Messrs. Ro biquet, Villaumé, and Bally of Paris—*Gazette des Hôpitaux, Medical Gazette, Sept. 1831.*

18. *New Mode of administering Calomel for the Cure of Syphilis.* By M. BIETT.—A butcher, ætat. twenty-eight, contracted syphilis in the course of the last year, and applying for relief to certain practitioners, who disgrace humanity by their vile charlatanism, obtained from them a large quantity of corrosive sublimate, disguised by the admixture of other drugs. The sores got well, or disappeared rather, under this treatment. But, some months after, the man suffered extremely from head-ache of the most excruciating intensity, from which emetics and bleeding procured him some alleviation. An eruption on the face now made its appearance, chiefly affecting the eyelids and the nose, and this brought him into the hospital. Here, as he showed symptoms of *gastro-enterite*, he was kept on slops, and such a regulated diet as seemed to check the progress of his disorder for a considerable time: all of a sudden, however, tubercles covered a great portion of his skin. He was ordered the *aqueous extract of opium*, with no success: then other methods, without amelioration. M. Biett now thought he should try a new mode of treatment, which suggested itself to him. This was to give the patient day after day an errhine, composed of a certain quantity of calomel, combined with an inert powder. In this way the man took successively, *eight, twelve, fifteen, twenty grains*, daily; and before a month was well elapsed, found his tubercles gone, his ulcerations cicatrized, and his general health so much improved that he was able to leave the hospital. He came in again subsequently for an inflammation of the synovial capsule of the knee, which was got down by cupping, leeching, and emollient applications. Some new pustules of his old complaint being observed, he was put on calomel once more, given in the manner just mentioned; and the consequence has been so satisfactory, that there seems to be no likelihood whatever of a return of the disorder.

M. Biett has employed calomel in powder in several other cases of secondary syphilis, and always with the most satisfactory results. Besides giving it in the form of an errhine, he applies it externally sometimes to venereal ulcers, and his success is truly remarkable.—*Lond. Med. Gaz. July, 1831, Gaz. des Hôpitaux.*

19. *Sulphate of Quinine as a remedy for Tænia.*—Carl Heinrich Kulka, by profession a butcher, was affected with an intermittent fever, for which Dr. KUNZSCH, after the employment of some emetic and cathartic remedies, prescribed, during the apyrexia, two grain doses of quinine to be repeated every two hours. He took six of these powders before mid-day at which time his fever recurred with great violence, attended with obstinate vomiting and convulsions. On the next day he took six powders of three grains each, which were repeated every hour. This arrested the fever, but the medicine was continued for a few days in two grain doses, four portions of which were taken daily. After taking the sixth powder he was seized with a violent diarrhœa, by which he passed in the course of three days, more than a hundred yards of a broad dead tænia, (über 100 ellen eines breiten, todlén bandwurms abgingen.) This individual had never before presented any evidence of the existence of the worm which was passed.—*Journal für Chirurgie und Augenheilkunde, Band 14, heft 4.*

20. *Case of Epilepsy relieved by Nitrate of Silver.*—The following case of epilepsy depending upon a tumour of the skull, related by Dr. DARWALL, is interesting, inasmuch as it was *permanently relieved* by the nitrate of silver.

"December 18, 1825.—Thomas Godfrey, aged eighteen, he died on the fifteenth of this month from consumption. His history follows:—

"Till eight years of age he was very healthy, and as active as other children. At this period he was burnt on the cheek, and after his recovery, remaining

weak, the cold bath was ordered for him; his terror of the water was extreme; shortly after this time he lost the use of his lower extremities, and remained helpless for some months, till, by accident, falling from his chair, he struck his nose and caused a profuse epistaxis; from this period, he gradually recovered the use of his limbs, and was at length able to walk, as well as other children of his own age, but about every three weeks he had an attack of head-ache, with violent vomiting; these attacks returned regularly till the last four years, during which he had no return of pain or sickness, but frequently complained of giddiness and dimness of sight. He remained, however, able to work till the 25th of August, when I first saw him, and he had then violent symptoms of phthisis; the disease gradually gained ground. About the latter end of September, or beginning of October, he was seized with attacks of epilepsy, which came on regularly every day at two o'clock. After they had continued a fortnight, he was ordered five grains of *argenti nitratum* three times a day in a pill. The first day, after having taken two pills, he had a slight shivering at the usual time, but had no attack afterwards till his death; he discontinued the pills after a week or ten days. He died on the fifteenth of December, and he was examined last night; there was nothing worthy of remark in the chest. The usual appearance in patients dying from phthisis were present.

"*Head.*—The brain was unusually large; the ventricles were lined with a strong factitious membrane. They contained at least twelve ounces of fluid; the corpus callosum was much raised, and the septum lucidum had the appearance of a strong transparent membrane. The communication between the ventricles was quite open. Upon the superior anterior portion of the right lobe of the cerebellum, and strongly attached to the septum, and slightly attached to the cerebellum, was a large, hard, and externally cartilaginous tumour. The interior was composed of scrofulous matter. The tumour was the size of a large walnut."—*Midland Medical and Surgical Reporter, May, 1831.*

21. *Excoriations of the Mammæ.*—Dr. FEIST, of Bensheim, states, in the 4th Volume of the *Gemeinsame Zeitschrift für Geburtskunde*, that excoriations of the mammæ may be cured more promptly by a solution of corrosive sublimate than by any other means. He recommends two or three grains of the sublimate to be dissolved in an ounce of rose or distilled water. A little of this is to be warmed; a small piece of fine linen, several times folded, or a piece of lint wet with this, is to be applied so as to cover the excoriation. This application should be always made directly after suckling, and the breast must be carefully washed with tepid water or milk before applying the infant to the breast. Great care is of course always necessary in applying so powerful a remedy. When the excoriations are not very deep, Dr. F. says that they will be commonly cured by this means in a few days.

22. *Case of Pulmonary Affection relieved by Inhalation of Chlorine.*—Mr. RICHARD HARDY, of Islington, relates in the *London Medical Gazette*, for September last, the following case in which he employed the chlorine with advantage.

"Mrs. W., about thirty-five years of age, applied to me on 6th of June, complaining of an acute pain in the chest, with occasional palpitations of the heart, difficulty of breathing, accompanied with a quick, full, and irregular pulse, and a dry short cough. On my first visit I bled her freely, from a full stream, to twelve or fourteen ounces of blood, and ordered her the usual medicines common in those complaints. She had, a few years ago, an hæmoptysis or hæmorrhage from the lungs, which had now returned, but not to an alarming extent. She was also pregnant with her seventh or eighth child, which, however, was favourable to her. The remedies employed were of the active kind, and she found great benefit from them; and all the most urgent symptoms were greatly relieved, except the cough, which continued unabated in violence, and became the source of great uneasiness both to herself and to her husband. After a few days the cough, which at first was dry, was now attended with an

expectoration of mucus; which soon gave place to a most decided purulent discharge, streaked with blood; and in the course of the day, she expectorated at least a pint of fetid pus. She was in this state I dare say a month, when Dr. Fox was called in, and he prescribed a mild tonic mixture, as likewise a mixture for the cough; which, however, she did not continue a sufficient length of time to benefit her. The inhaling of chlorine had been named to her husband by me; and he became very anxious that its trial should be put to the proof, rather than persevere in the old plan, known as being "well established as unsuccessful;" I therefore decided that she should begin inhaling the chlorine without further delay; and I began first with twenty drops in a pint of boiling water, three times a day, gradually increasing it till three drachms were inhaled each time, with an addition of twenty drops of tinctura opii to the one going to bed. In this manner she continued to inhale it for two months, with a steady perseverance, to conquer the cough, which at length she accomplished, and lives to surprise her friends and relatives. She has since been delivered of a healthy child, and continues perfectly free from cough, and feels no other inconvenience than a wish to indulge her voracious appetite.

"This case is worthy of remark, because, if she had been treated in the old jog-trot plan, she must inevitably have sunk into her grave. I think every medical man would do well to endeavour to bring it into general use, because I am sure many persons might be restored to their families who otherwise would fall victims to the disease."

"I have another case under my care, but which has not been long enough under the action of the chlorine to enable me to report its progress; but the patient is a great deal better since she commenced using it."

23. *On the Connexion between Abdominal Diseases and Chronic Meningitis.*—We find in the *Midland Medical and Surgical Reporter*, for August last, some interesting remarks on this subject by Dr. HASTINGS. The intimate connexion that exists, between disorders of the digestive organs and of the cerebral system, has long been remarked by physicians. Of the various forms in which these complicated affections present themselves, there is one, termed rather indefinitely, determination of blood to the head, of which Dr. H. relates some cases, not undeserving attention in a pathological point of view, as they tend to show the necessity of great regard being had to the state of the cerebral system, whenever the alimentary functions are disturbed. "Whatever," says Dr. H. "may be the nature of the diseases designated by the foregoing vague terms, it is certain that in practice, it not unfrequently happens, that medical men are called upon to treat certain cases of the above nature, which commence in a very undefined manner. It is, for example, no uncommon thing to meet with persons of all ages and both sexes, but, I think, more especially females, whose complaints, for some time, have seemed to be almost entirely confined to certain uneasy feelings in the epigastric region. When that part is pressed, there is tenderness; after eating, there is fluttering and palpitation of the heart, with a sensation of sinking, and to this state is apt to succeed flushing of the face, and sometimes uneasy feelings in the head, without much pain.

"If the case be not at this time subjected to proper treatment, or even, occasionally, if proper treatment be adopted, there is likely to occur increased action of the carotid arteries, and very irregular spirits: a degree of elevation of mind, and hilarity of feeling, for a time, will come on, followed by a corresponding state of lowness. There is also the same inequality in the temperature of the body; alternate flushing and coldness being present, but, for the most part, the extremities are cold, and the face and head hot. The pulse, when the last mentioned symptoms have set in, is generally small and frequent; but occasionally it is not altered from its natural state. The tongue is furred, and rather clammy. At no longer period after this secondary state of what we may term cerebral irritation has commenced, it occasionally happens, that strongly-marked symptoms of excitement of the brain come on. Delirium, generally mild, but

of an insidious nature, sometimes makes its appearance, and ends in coma, and death.

"This has often struck me as a very interesting piece of pathology, and one that challenges close investigation, on account of its trivial appearance at the commencement, which, I have before observed, is simply an uneasy feeling, and, as the patient expresses it, a sinking at the pit of the stomach. I shall not now stay to endeavour to discover what is the connexion between the first simple state of uneasiness at the stomach, and the secondary one, vaguely called determination of blood to the head. My object, at present, being to call the attention of the reader to the simple fact of this connexion between the two parts.

"I am, also, desirous of pointing out, in what light this affection presents itself to my mind; and to show, from morbid anatomy, what the pathological state, frequently denominated determination of blood to the head, really is in this instance.

"In all cases of this kind which have terminated fatally, under my care, in the manner above pointed out, where post-mortem examination has taken place, it has never failed to appear, that the membranes of the brain have been much affected; that, in short, chronic inflammation had taken place in them, and had produced alteration of structure in those parts, particularly thickening of the arachnoid membrane, and effusion of a serous fluid between it and the pia mater; as also, sometimes, although this is a more uncommon occurrence, into the ventricles of the brain. I have in most of the cases, but not in all, discovered traces of disease in the abdomen, as in the liver, spleen, or small intestines."

Dr. H. is with great reason of opinion, that many of the symptoms called nervous, which are so harassing in some dyspeptic cases, may be traced to a slow alteration of structure of the membranes of the brain; and that it is of great importance to pay attention to the state of the cerebral system in such cases. "We should therefore" he says "in all affections of this kind, in addition to the remedies which the disorder of the digestive organ requires, consider in what manner the affection of the head is to be treated.

"Now, although the effect produced on the brain by these abdominal disorders, is cerebral congestion and slow inflammation of the membranes of the brain, in which condition the capillaries lose their tone in a great measure, and allow themselves to be dilated beyond their healthy calibre, by globules of blood, yet I have no reason to think that general bleeding is successful in mitigating, materially, the cephalic symptoms in those instances where the inflammation is of long standing, and the general strength has been impaired by prolonged indigestion. Local bleeding, however, by leeches or cupping, at the temples, or nape of the neck, and counter-irritation, by caustic or issue, in the neighbourhood of the head, is often very beneficial; but, I again repeat, that there is no one point in practice, of which I am more convinced, than that blood-letting requires, in this affection, to be used with great caution. It is my conviction, that it often proves prejudicial, by favouring the disposition, so fearful and fatal in its consequences, to serous effusion.

"Under these circumstances, viewing with much suspicion any considerable loss of blood in these cerebral affections, the necessity will be conceded, of employing most sedulously all other means that are likely to remove the inflamed state of the membranes of the brain. Cold applications to the surface of the scalp, after it has been shaved, I have found very efficacious. In all cases of this nature, where there is an augmentation of the temperature of the head, and flushing of the face, they should be unremittingly applied. Ice, mixed with common salt, confined in a large bladder, and kept constantly applied to the head, I have found a very convenient and efficient means of effecting this purpose. This application has proved, in my hands, conspicuously beneficial, in some instances of inflammation of the membranes of the brain, where considerations have deterred me from much blood-letting.

"From amongst others, I will cite the case of a young lady, whose recovery was forwarded by this remedy.

"CASE IV.—A young lady, aged thirty, had been complaining, for some time, of tender epigastrium, and fluttering and palpitation from slight causes. Some time afterwards, her face began to flush, which was soon followed by delirium. The tongue was much furred; stools very unhealthy; pulse 120, small at the wrist, very throbbing in the neck.

"She had been freely purged. Blood had been twice taken from the arm, and she had been cupped from the nape of the neck. The remedies, however, had not produced any good effect. The pulse got up to 140, and the extremities were cold, whilst the head was burning. It was manifest that further loss of blood could not be borne. The head was shaved, and ice was applied to it, so constantly, that the scalp was kept quite cold for twenty-four hours; during the greater part of which time the delirium was prevented, and the flushing of the face was much diminished. The carotid arteries did not pulsate so strongly. By a persevering use of the ice, and the occasional loss of small quantities of blood from the scalp, together with proper attention to the digestive organs, this young lady gradually recovered, and is now in a good state of health.

"The above fact, and several others of a like nature, have induced me to consider this external remedy as one of great power in the class of affections which I have been considering. It is, also, almost equally beneficial in the attack of pure phrenitis, although not in so conspicuous a manner, because, in this more acute disease, the strength of the system enables the patient to bear a free use of the lancet, and the more rapid march of the symptoms imperiously requires it.

"It is always desirable, when we can, to offer a rational explanation of the effects of a remedy, and it often leads us to still more successful applications of it. In this instance, it appears to me, that a very lucid explanation may be given of the *modus operandi* of this remedy, by experiment on living animals.

"From the account I have given of the dissection of these cases, it appears that, as far as the head is concerned, the symptoms are produced by an inflamed state of the membranes of the brain; or, in other words, by the capillary vessels of those parts being dilated, and congested with blood. Let us, then, observe, by aid of the microscope, the state of the blood-vessels when inflamed, and see in what manner they are affected by the application of ice to the affected part."

OPIHTHALMOLOGY.

24. *Increased sensibility of the retina.* By R. MIDDLEMORE, Esq.—The term morbid sensibility of the retina applies to a variety of diseased conditions, which may or may not be attended with an organic change in the texture of the retina itself: for instance, the retina may possess an augmented sensibility to light, forming what is termed photophobia; it may be unusually sensitive to some particular colour, or to many colours; or it may be morbid as regards its sensibility only in reference to certain combinations of colour. Then, again, it is important to distinguish between increased and depraved sensibility, inasmuch as the former consists in an augmented sensation, from a natural degree of impress, whilst the other mistakes, distorts, and perverts the form, colour, magnitude, and distance of surrounding objects. Each of these states of the retina is, in nearly every instance, symptomatic of disorder, disease, or irritation of some near or distant organ or texture, scarcely ever arising from any functional or organic defect in the retina itself as a primitive disease; but as I intend to confine my observations as much as possible to the increased sensibility of the retina to light merely, I shall only adduce the more ordinary causes of this single phenomenon.

The retina of strumous children has frequently a much increased suscep-

tibility to light, without being combined with any change of texture: in the same way, various morbid or irritable states of the uterine system lead to the production of this condition of intolerance of light; and the defects of this function to which I more particularly allude, are those in which the uterine secretion is altogether absent, or diminished in its quantity, to which must be added painful and irregular menstruation. I have seen very many cases of this description, where the retina has been so intolerant of light that the eyelids have been closed during the whole of the day with a spasmodic force equal to that which occurs in acute retinitis, so that any attempt at separating them has occasioned great pain, and induced severe spasm of the orbicularis palpebrarum, yet the eye itself has been perfectly free from inflammation, and quite natural in appearance, with the exception of a contracted state of the pupil. If such a condition of retina exists in combination with amenorrhœa, suitable remedies, directed to the torpid condition of the uterus, will, if they establish its natural function, quickly relieve the spasm of the orbicularis, and remove the augmented sensibility of the retina, and any attempt to restore the eye to its natural and healthy condition, under such circumstances, by local remedies, employed with a view of "deadening" the sensibility of the optic nerve, would be far from constituting the "most rational mode of treatment." A short time ago, I saw, in the absence of a medical friend, a young woman whose case is so fully illustrative of my views on this subject, that I shall briefly mention its outlines. She was a girl of a healthy appearance, and about nineteen years old, and had never yet menstruated, but suffered occasionally from pain in the loins and the lower part of the abdomen. The eyelids were forcibly closed; and from the frequent and powerful contraction of the orbicularis and corrugator muscles, they had acquired considerable power and thickness. The most careful attempt to examine the state of the eye occasioned extreme torment and profuse lachrymation, and was succeeded by a series of painful and spasmodic contractions of all the muscles of the eye-ball and lids; but there was no external inflammation, and no evidence of any deep-seated inflammatory mischief, although the pupil was extremely small and contracted. She had tried various local applications before I saw her without the slightest advantage, but was speedily cured by the use of Griffith's mixture and a few of the common pilulæ aloes c. myrrha. A young woman came to me a few days since from Westbromwich, with, to use her own words, a spasm of the eyelids; and after examining the state of the eye, (one organ only being affected,) and observing its freedom from inflammation I ascertained that she also was the subject of amenorrhœa; and although she has tried fomentations and collyria, of various kinds, for many months, I have little doubt of her speedy and perfect restoration by the employment of the constitutional treatment which the more important disease, (amenorrhœa,) of which the condition of the retina is merely a symptom, requires.

Without entering further into the details of cases illustrative of the various causes of an increased sensibility of the retina, I may state, 1st, that it may be produced by any source of gastric and intestinal irritation, the most frequent of which is, that condition of the mucous surfaces which occurs in strumous children, or is produced by the existence of worms; 2d, by general nervous excitement; 3d, by various morbid states of the sensorium; 4th, by various disordered, diseased, or irritable conditions of the uterine system; 5th, by inflammatory and other affections of certain parts of the eye; 6th, by disorder or disease of its own proper structure, and this is of all others the most infrequent cause of photophobia.

As regards the treatment of this increased sensibility of the retina, it will, of course, depend altogether on the cause producing it; but as in nearly every instance, it is but a symptomatic affection—a symptom of disease or disorder in some other part—local treatment, in the general, must be of a very subordinate character.

It is not, however, my intention to pursue this part of the subject in detail; for the adoption of such a course would be absolutely detaching one symptom of

a disease from its associates for the purpose of distinct treatment; it would, in short, be making a separate disease of a symptom without any good or sufficient reason for so doing. The treatment of the scrofulous, the gastric, and the uterine photophobia, and, indeed, almost all its other forms, is, in fact, but the treatment of the disordered or diseased condition of that organ, or that state of the system, of which it is but an occasional symptom; and which must be conducted on the same principles which would guide us in the management of the same cases where no affection of the retina existed.—*Lond. Med. Gaz. July, 1831.*

25. *Chloride of Lime in Purulent Ophthalmia.*—We noticed, in a preceding number of this Journal, the observations of Edward Græfe on the employment of the chloride of lime, in the treatment of gonorrhœa. We now call the attention of our readers to the remarks of Dr. HERZBERG, of Berlin, relative to the use of the same article, in purulent ophthalmia. He was originally induced to give it a trial, in these cases, from observing its great efficacy in checking all profuse mucous secretions. The following cases are detailed, in proof of the remedy:—

Traugott Hirsche, aged twenty-four years, of a healthy and robust constitution, had spent the early part of his life without being affected with any very important disease. While stationed in the garrison, at Berlin, he became affected with a severe ophthalmic inflammation, which was supposed to be of the rheumatic kind, and for which he was confined three weeks in a military hospital. On the 8th of May, a few days after he had connexion with a female, he observed a slight discharge from the urethra. Under these circumstances, influenced by the advice of an old woman, who recommended him to wash his inflamed eyes with his urine, he performed that operation several times; but the consequence, which, in most cases, would perhaps have presented nothing remarkable, were here truly formidable, in consequence of the gonorrhœal affection under which the patient laboured. A few hours after the urine had been applied to the inflamed organ a heavy smarting sensation was experienced about the internal angle of both eyes. To relieve this pain, he repeated the application of the urine, and in the course of a quarter of an hour the pain was greatly increased, and the eyes became red, and intolerant of light. In this condition he remained twenty-four hours, without calling for surgical aid. When Dr. Herzberg first saw him, the upper eyelid was swollen like a bladder, and was folded, as it were, over the lower lid which was also swollen. The cilia were directed inwards, and from the eye a yellowish coloured purulent fluid was discharged, similar in its characters to the discharge from the urethra. When the lids were separated, which was difficult to accomplish, this fluid flowed away in a stream. The conjunctiva of the lids and of the ball of the eye was rendered so prominent, by the tumefaction, as to form a kind of dyke. It presented a dark red colour, and a profuse greenish-yellow, purulent secretion flowed from every point. Profoundly situated in the ball of the eye, a darkish coloured spot could be discerned, which was supposed to be the cornea. These symptoms were most strongly developed in the right eye, though the patient complained of a painful sensation of pressure in both. The pulse was full, hard, and frequent, and there was a frequent sensation of chilliness. The discharge from the urethra continued. The patient was bled to the amount of four porringers, was directed to take two grains of calomel, four times a day, and was put upon a severe diet. As a local application, the following was ordered to be injected into the eye, and applied externally, every ten minutes: *R. Calc. oxy muriatic, ʒss.; Aq. distill. ʒvj. Solve.* In less than two hours the discharge assumed a whitish appearance. On the 11th, the quantity of the secretion was greatly diminished, and it was much thinner and less consistent than it had been before. The tumefaction of the conjunctiva had subsided, still, however, the condition of the ball of the eye could not be determined. As the pain in the right eye continued, after the venesection, twelve leeches were applied in its vicinity, and the other remedies were continued. 12th. The swelling still more abated; the discharge of a whitish ap-

pearance, and less copious. In proportion as the tumefaction subsided, the cornea was exposed, covered with ulcers. Tinct. opii. $\mathfrak{z}\text{i}$. was added to the collyrium, which was directed to be continued as before. From this time, the improvement was progressive. On the sixth day after the commencement of the calomel, evidences of salivation making their appearance, that remedy was discontinued, and a gentle saline cathartic was directed. The collyrium was continued until the 15th day from the commencement, when there being no further discharge, it was left off, and the tinct. opii. crocata was applied to the cornea, by means of a fine camel hair pencil. This was continued until the 8th of May, when the ulcers of the cornea were entirely healed.

In the following case, the syphilitic character of the disease is doubtful, though the father was affected with it, and the mother with fluor albus.

A child of the name of L. Burnmeister, became affected, on the evening of the third day after birth, with frequent sneezing, with redness of the eyes, and profuse lachrymal discharge. The inflammation progressed rapidly, and by the fourth day, the lids were swollen to the size of a walnut, and a profuse bleomorrhæal discharge issued from the eye. The ball of the organ was entirely concealed by the lids, which could not be opened. Two leeches were applied to each eye, and one grain of calomel was directed to be given, three times a day. The following collyrium was ordered to be injected between the lids, and applied externally, every ten minutes: R. Calcaria oxymuriat. $\mathfrak{H}\text{℥}$. Aq. distil. $\mathfrak{z}\text{vj}$. Solve. In thirty-four hours the character of the discharges had improved, and the quantity was considerably diminished. The tumefaction, and other symptoms subsided, from day to day. The wash was finally exchanged for the tinct. opii. simp. which was applied by means of a camel hair pencil, and by the 14th day, the cure was completed.

In the case of Otto Schoppen, aged three weeks, where the eyes were in a similar condition, the chloride of lime, unassisted by any other remedy, produced a complete cure in a few days.

Maria Küstern, aged six months, of a feeble constitution, and born of a mother who suffered much from fluor albus, became affected, on the third day after birth, with the ophthalmia neonatorum. Against this all the usual domestic remedies were employed for the space of eight weeks, and amongst others the urine of the whole family, from the father and mother down. The same sponge which was employed in washing the child's eye, the mother used to wash her face. In twenty-four hours, the left eye was affected with an acute inflammation, and in forty-eight hours, an intense ophthalmic bleomorrhæa was established. In the case of the child, the chloride of lime was employed, as above; but in that of the mother, six leeches were applied to each eye, and two grains of calomel were given every three hours; $\mathfrak{z}\text{ij}$. chloride of lime were dissolved in six ounces of water, for a collyrium. On the third day, the calomel was discontinued, and by the tenth day, both mother and child were cured.

The result of these cases, as well as of some others to be found in the records of the day, seem to speak favourably of the remedy in question, both in the gonorrhæal ophthalmia, and in the simple mucous form of the disease. It deserves, at least, a fair trial.—*Journal für Chirurgie und Augenheilkunde, Band 14. heft 4.*

26. *Inflammation of the Eyes from Crusta Lactea*.—M. STEINHEIM of Altona relates in the 14th Vol. of the *Journal für Chirurgie und Augenheilkunde*, the case of a child whose body was covered with crusta lactea; this eruption extended gradually and produced inflammation of the conjunctiva with copious purulent discharge. The lids swelled and concealed the eye; and when after some weeks the inflammation abated and the swelling disappeared, Dr. S. found that the left eye was entirely destroyed. Warned by this accident, Dr. S. has since used, with entire success, in cases of crusta lactea menacing the eyes, the application of a weak mercurial ointment to the eyelids and corners of the eyes, which prevents the extension of the disease to these organs without suppressing it on other parts of the face.

SURGERY.

27. *Case of Inguinal Aneurism in which the External Iliac Artery was tied.*—Patrick Connell, æt. thirty-eight, was admitted into St. George's Hospital, February 15th, 1828, under the care of Mr. BRODIE. He stated that in the month of October last he was much exposed to cold and damp in Whitecross Prison, and at that time was particularly affected with "rheumatic pains," particularly in the left leg. About the middle of November, whilst making some exertion, he felt something "give way" in the left groin, and soon afterwards noticed a small pulsating tumour there. It increased gradually in size for the first fortnight, and then remained stationary, or nearly so, until the beginning of the present month, when it became much more swollen and painful, and the limb generally œdematous. He applied eight leeches to the groin with some relief, and took a purge or two, but has done nothing further for the complaint, and has followed his ordinary occupation until very lately.

Such was the history of the disease given by the patient; and the following were the symptoms upon his admission:—In the left groin was a hard pulsating tumour, nearly filling up the triangular space between the sartorius and pectineus muscles. The margin of the tumour was tolerably well defined; its form was triangular, and its surface irregular, being more prominent above and below than in the centre. It appeared to be somewhat abruptly bounded by Poupart's ligament above; and extended downwards for better than two inches, probably to the point where the profunda femoris is given off. It was reducible in a great measure by pressure; the pulsation was distinct, and apparently very near the surface, showing that no great quantity of coagulum had been deposited. Pressure upon the external iliac artery completely arrested the pulsation of the tumour, but did not materially diminish its size; whilst pressure on the femoral below only lessened the pulsation. The whole limb was greatly swollen and rather tense, while the foot was œdematous and numb. There was much stiffness, with tingling, and pain shooting from the groin round to the outer side of the thigh, and down to the outside of the knee. His health had always been good; but he looked sallow and anxious, had been suffering many privations, and a great deal of mental distress. The appetite was indifferent; he did not sleep well; the bowels were costive, tongue red, and the pulse had the aneurismal jerk.

Under these circumstances, he was bled once or twice, and purged; and on the 21st, the pulse being quieter, and the patient anxious for the operation, the external iliac artery was tied by Mr. Brodie.

The method of operating was that which has been recommended by Mr. Abernethy: the incision, however, being somewhat semi-lunar, and placed rather more on the iliac side of the vessel than in that gentleman's operations. The oblique and transversalis muscles were carefully cut through, the peritoneum cautiously raised from the belly of the iliac and psoas muscles, and the artery discovered pulsating on the inner side of the latter. Care was required in passing the needle round the vessel, in consequence of its having contracted some adhesions to the vein, &c.; but this being done, and the ligature, which was a single one, drawn tight, all pulsation ceased immediately in the tumour, though it did not diminish much in size. The lips of the wound were brought together by three sutures and adhesive straps; one end of the ligature brought out at the wound, the other having been cut short; and the patient removed to bed. The operation was performed with great facility, and the patient bore it remarkably well; whilst the pain in the thigh, &c. almost instantaneously ceased. In the evening the limb was colder than the other; he had been sick, and was restless. Pulse a little harder than in the morning. A flannel roller had been applied.

22d. He passed a better night, but his appearance is far from being satisfactory this morning: his breathing is oppressed; he speaks in an under tone, as

if fearful of calling into action the respiratory muscles; and there is that playing of the nostrils described by Mr. CHARLES BELL as marking an insidious affection of the chest. There is pain in the right side and loins on taking in a full breath, as well as in attempting to cough, which he is afraid to do; thirst; tongue coated; pulse ninety, corded, and full. Mr. Brodie, on seeing the patient at one P. M., immediately directed a vein to be opened, and, after eighteen ounces of blood had been abstracted, the pain in the side was relieved, and the countenance clearer.—II. Senna, sextis horis.

Vespere.—The bleeding has had a most decided effect, the pain being much relieved, and the hardness of the pulse diminished. He has been asleep during a great part of the day, and feels much better this evening. The bowels have not yet been opened. The blood drawn is buffed.—Repet. Haust. Senna.

We take so much of the history of this case from the *London Medical and Physical Journal*, for April, 1828; the result of the case is given by Mr. LAIDLAW in the same Journal for Oct. last, Mr. L. states that after the performance of the operation, the patient who had always been very unhealthy and been exposed to many hardships, was never completely well, constantly suffering from cough and affection of the lungs; his legs became œdematous; and continuing thus to get worse, in the early part of the present year, (1831), he became dropsical and died. Upon examining the remains of the aneurismal tumour, it was found to be somewhat larger than a pigeon's egg, situated immediately below Poupart's ligament, and filled with a firm coagulum. Upon tracing the vessels connected with it, it was found that in this case the external iliac artery, instead of, as usual, giving off the epigastric and circumflexa ili, and then becoming the common femoral artery, divided all at once into three large vessels, one of which again dividing, formed the epigastric and circumflexa ili; another formed the profunda femoris, and the third continued its course as the superficial femoral artery. It was at this point of general division that the aneurism had formed, so that, in the preparation, the cut ends of the several vessels are seen hanging from the tumor. The external iliac artery was entirely obliterated, from about three-quarters of an inch above the tumour; the internal iliac was nearly twice as large as it is in ordinary circumstances, but appeared to be perfectly healthy; nor was there any appearance of disease found in the aorta. The operation had been most completely successful, and it would have been satisfactory to trace the anastomosis of the vessels; but the relatives of the deceased having a great objection to allowing an examination, it was necessary to perform it clandestinely, and the incision having been made in the loins only sufficiently large to admit the hand, and so remove the preparation, any further dissection was impossible.

28. *Extirpation of an Osteo-Sarcomatous Jaw.* By Professor REGNOLI.—Giulia A., aged about twenty-two, was for the first seventeen years of her life a perfectly healthy girl. At that period she received a blow on the right cheek; after which she began to feel in the incisor teeth of that side, a pain, not very severe, but constant, and annoying her with the sensation of cold when in the act of drinking. A portion of the gum began gradually to swell, and there was formed ere long a soft and circumscribed tumour, about the size of a small nut, just over the alveolar processes of the incisor teeth. An incision being made into it, gave issue to nothing but an abundance of blood, which the surgeon was obliged to staunch with nitrate of silver. The repeated application of the same caustic destroyed the tumour in less than a month, but the pain still continued fixed and constant in the same spot. In the course of six weeks the tumour showed itself afresh, and with a growth far more rapid than ever. The catamenia now became suppressed, and hæmoptysis and convulsions began to distress the patient. She was advised by a physician to have the tumour extirpated and cauterized, but the sight of the red hot iron threw her into her habitual convulsions, and the operator, after removing as much as he could of the diseased part, was obliged to be content with the application of a concentrated

acid and some *lapis infernalis*. But the tumour grew again; and, moreover, there was perceptible about the base of the right ala of the nose another tumour, which, after remaining stationary for a time, began to grow apace, and painfully to afflict the patient. In eighteen months it attained so alarming a magnitude that the poor girl was falling into extreme despondency, and almost cursed her existence. She, however, was aware that she still had a chance of her life by extirpation, and accordingly determined to make one more trial of art. With this view she entered the hospital at Pisa.

"I saw her, (says Signor Regnoli,) for the first time on the 6th of April, 1831. The disease consisted in this tumour of the right jaw, intimately connected with the bone, at its base about the size of an ordinary apple, extending from the second molar of the right side to the canine tooth on the left, lifting up the ala of the nose, and turning aside the cartilages to the left. The teeth within this space were very loose, but unaltered in colour or form; their gummy sockets, however, as well as the internal membrane of the upper lip, were highly vascular. The tumour felt hot to the touch, soft in some places, hard in others; inelastic, immoveable, unequal, pulsating too in some degree in its lower part, (owing to the increase of calibre in the arteries of the gums,) and bloated with the quantity of blood which it contained. The patient occasionally suffered much from lancinating pains.

"It was clearly a case of osteo-sarcoma; and the lymphatic system and general health of the patient being good—no fever—no want of appetite—no wakefulness—the catamenia, too, being returned—and there being but few accessions now of either the hæmoptysis or convulsions, I made up my mind to operate; and the patient consenting eagerly to the proposal, she was simply prepared for the occasion with a *purgative oil draught*.

"On the 11th April, having placed her in a suitable position, I stretched and raised the upper lip, and with the common convex bistoury divided the integuments along the right lateral portion of the nose, beginning immediately beneath the lower eyelid. This division enabled me to separate readily the sound from the unsound tissues, to dissect the cartilages of the nose, and to distinguish the precise limits of the diseased part. Following the tumour, always though within the sound bone, I carried the bistoury through the periosteum all round; and then, with chisel and mallet, circumscribed the tumour, first in the right maxilla, then in the left, and lastly in the palatine vault. I detached it, and was particularly anxious to do so speedily, in order to save the patient's blood, for it would not have been easy to deliberately secure the arteries which went to the centre of the tumour. The hæmorrhage was checked with the actual cautery, applied only to the points of attachment. The division of the lip and cheek was united by the first intention by means of the twisted suture; and in order to support the lip on its posterior side, I merely put a little *claspie* into the cavity left by the tumour. Louis's bandage for hare-lip completed the arrangement.

"On examining the tumour, our diagnosis was confirmed. I took a pair of compasses, in presence of the pupils, and measuring the dimensions of the diseased mass, applied them to the face of a young woman of the same age as the patient. We found then that the bistoury had been carried close by the base of the apophysis of the upper jaw, between the first and second molar teeth; had opened partly the antrum of Highmore, and taken off a portion of the middle olfactory partition: that on the left maxilla it had been driven between the canine tooth and the second incisor: thus a portion of the alveolar processes, containing six teeth, had been carried away along with the margin of the anterior opening of the nostrils. In short, it appeared that all had been removed that was contained between the palatine apophyses of the two maxillæ.

"The patient during the whole of the operation displayed the greatest courage, and never once gave sign of agony, except just when a number of filaments of the trifacial nerve were divided. She was conveyed to a separate ward, and committed to the special charge of two of the pupils.

"Apprehensive of hæmorrhage and inflammation, I ordered her to have ice.

constantly in her mouth. I directed her diet to be rigorously low, chiefly consisting of copious cooling drinks; and positively forbade all use of speech. Half an hour after the operation, she complained of pain in the wound, extending into the head; but there was no acceleration of pulse—no nervous symptom. In the evening, however, the pulse denoted a febrile accession. *Venesection to ten ounces* procured her repose: and next morning she was free from fever, and had nothing to complain of except the inconvenience of her drink getting into her nostrils, notwithstanding the precaution we took of giving her all fluids out of a spouted cup. At eleven o'clock, same night, she suddenly started delirious from her sleep, and got up to run away; her eyes were motionless and blood-shot—her face flushed. Ordered *some drops of liquid laudanum*. When she came to herself in the course of an hour, she gave me to understand that she was troubled with the smell of the bandage: I removed it to satisfy her. After this she slept quietly till next day. On the 13th, in the morning, she was without fever—without pain—she was even in excellent spirits: but as the bowels seemed to be a little out of order, I ordered her *an ounce of cream of tartar*, which had the desired effect. The eschars from the cauterization yielding a thin, fetid discharge, I employed frequent injections of warm water in the nasal passages. In the evening some febrile symptoms were dissipated by a smart sweat. 14th, Dressed again. 15th, The patient in such good spirits, and so disposed to laughter, that it seemed better not to remove the needles, though the cicatrix was united. 16th, The needles removed, and simple sticking plaster left on. *A lavement*, which removed a slight pain of the head. On the 20th, some portions of bone, necrosed by the cautery, came away, and in their place were seen healthy granulations. By the 30th, the communication between the mouth and the nostrils no longer existed.

“May 12th.—It was thought necessary to extract some little splinters of the palatine apophysis, which retarded complete cicatrization. The cicatrix is now become solid, whitish, not painful to the touch, and altogether of a very favourable description. The face is less disfigured than it was by the tumour; the nose has resumed its natural position; the nostrils are unembarrassed; and nothing is very remarkable in the young woman's countenance except the scar, and the depression of the cheek and lip: the lip is by no means destitute of motion, though it is certainly not unimpeded. The articulation is but little affected; mastication is performed pretty well with the molars alone. The patient, in fine, has recovered her flesh and complexion; and all her functions proceed regularly, as in a state of good health.”—*London Med. Gaz.—Gazette des Hôpitaux*.

29. *Aneurism of the Right Axillary Artery cured by Tying the Subclavian Artery.* The subject of this case was a man sixty-three years of age. The tumour presented the section of an oblate spheroid, of about the size of a large orange; it extended from the clavicle into the axilla, and was attended with considerable unremitting pain, almost utterly precluding sleep. The disease was attributed to a hurt received some time before; on careful examination, no disease of any other artery or of the heart, was discoverable. The operation was performed on the 17th Dec. 1830.

“Sixty minims of laudanum were given immediately after the operation, and which dose was repeated an hour or two afterwards, but without producing any considerable relief. The same night, the patient complaining of increase of pain in the wound, with considerable difficulty of deglutition, and some dyspnœa, and a severe pain extending from the left hypochondrium to the right shoulder, he was bled to the extent of ℥xviij . and which operation was repeated the following morning, in both instances with the greatest possible relief. He was of course restricted to a rigidly antiphlogistic diet and regimen, and the bowels relieved by repeated doses of a saline aperient, combined with antimony, preceded over night by an alterative aperient pill.

“From the above date, little remains to be observed, as to the mere history

of the case, excepting that the above symptoms, though decreasing in violence, continuing from time to time to recur, were obviated, or reduced by various modifications of the same means; while, in addition, local painful affections were relieved successively, by the employment of warm spirituous fomentations, liniments, dry friction, the use of flannel, and the last ten days, by the warm bath.

"The last ligature came away on the twenty-ninth of January, and there now remains only the most minute moisture on the spot from which it escaped."

The operator and narrator of this case, W. BLANN, Esq. attributes its successful issue, in a particular manner, to the very early and repeated employment of the lancet, the use of spirituous fomentations to the limb, and the support given to it, by means of a broad flannel sling, by which the arm was steadily supported without sustaining any disagreeable pressure: this, in a case of unavoidably long duration, though apparently trivial in itself, was a matter of great moment. There is yet another circumstance, he adds, to which I shall beg to call attention. the careful, but gentlest possible expulsion, by means of pressure, of as much of the discharge as practicable, from the wound, each time that it is dressed; by which the danger to be dreaded from the unpropitious direction of the external opening of the wound, (which instead of being in a depending situation, is at all times almost perpendicular above its fundus), is in a great measure, if not entirely obviated.

There was a very slight expectoration of blood, on the 5th of this month, (February,) but which was immediately obviated by bleeding, and has neither returned nor evinced any tendency to return.—*Lond. Med. and Surg. Journ. Oct. 1831.*

30. *Nervous Tubercle.*—The following case of this is related by Mr. SYME in the *Edinburgh Medical and Surgical Journal*, for October last. Mary Comrie, aged seventeen, applied at the hospital on the 23d of March, on account of a small moveable subcutaneous tumour, about the size of a large pea. It was seated a little below the middle of the left leg on its outer side. It was of very firm consistence, and adhered with its external surface to the skin. When pressed, it was moderately painful, but occasionally gave rise to paroxysms, of the most exquisite suffering, far exceeding, though somewhat resembling, the severest tooth-ache. These attacks lasted various periods, from half an hour to several hours, and were induced by slight external irritations, such as gentle rubbing—or mental agitations, such as sudden alarm; but frequently commenced without any cause that could be perceived. It is remarkable that mental emotions were no less powerful in cutting short the fits than in exciting them. She had not perceived any difference at the menstrual periods.

She observed the tumour two years ago; her attention being directed to it by the pain; and when first noticed, it was as large as at any time afterwards.

The tumour when removed exhibited a pearly lustre externally, and possessed a dense cartilaginous consistence. The patient was immediately relieved from all her uneasy feelings.

31. *Luxation of the Humerus of forty-eight days Duration successfully Reduced.*—A case of this is related by M. BRESCHE in the *Journal Universel et Hebdomadaire*, for April last. The subject of it was a man sixty-nine years of age; the luxation was downwards and forwards; and the reduction was unattended by ill consequences. The method adopted was that always employed at the Hôtel Dieu and which has generally succeeded there and has never been productive of injury. A compress covered with simple cerate is placed in the arm pit of the luxated arm, the counter-extending band is placed over this, and fastened to an iron ring in the wall so that the counter-extending force is fixed. Extension is made by three or four assistants by means of a band tied around the wrist. The attention of the patient is diverted from the efforts at luxation by some means, such as accusing him of not attending to the regimen prescribed for him, &c.,

In the case under consideration, the first attempt, which was continued for two or three minutes, did not succeed, but a second effected the reduction.

MEDICAL JURISPRUDENCE.

32. *On the Detection and Identification of Arsenic in Complex Organic Mixtures.*—The *London Medical Gazette*, for Sept. last, contains some interesting observations on this important subject, by Dr. ROBERT VENABLES. "None but they who have practically satisfied themselves of the fact," says Dr. V. "would credit the minute—I may almost say the evanescent—proportion in which poisons are usually found in the contents or tissues of the viscera of those who perish by their fatal operation. This arises from a variety of causes; but the two principal may be considered as vomiting and decomposition. By the former the great bulk of the poison is ejected, and frequently lost before the medical jurist arrives, or has an opportunity of providing against such a contingency. Indeed, vomiting—at least spontaneous vomiting—occurs under circumstances, and probably in situations, which preclude the possibility of identifying the vomited matters.

"The decomposition of the poison may be either natural or artificial. Natural decomposition is the result of the mutual agency of the stomach with its contents, and the poison, upon each other. In some instances the poison is the sole active agent, the decomposition arising from its action, (generally a corrosive one,) upon the tissues or substance of the viscera. Artificial decomposition is caused by the injection of antidotes, medicinal or alimentary, either purposely administered, or taken as food in the usual course. By these agencies the poison is so diminished in quantity, and so altered in both its sensible characters and its chemical constitution, as in no small degree to embarrass the medical jurist, and to render his duties not only intricate, but awfully painful and distressing.

"The two great difficulties then, in the way of medico-legal analysis, is the alteration in chemical constitution, and the minuteness of the quantity, compared with the bulk and complexity of the organic matters. The former may be easily obviated, because we can readily ascertain by experiment, the nature of the chemical decompositions; and being thus acquainted with the alterations so induced, we can provide the means of remedying these inconveniences. But the minuteness of the quantity, compared with the bulk and complexity of the matters for assay, is a source of embarrassment, against which we can oppose nothing but patience, assiduity, and the dexterity resulting from industry in the constant and habitual practice of medico-legal researches."

Dr. V. speaks in the highest terms of Dr. Christison's directions for the detection of poisons, but states, that there are some imperfections in it, which it is important, if possible, to remedy. "One is the occasional presence of organic products in intimate mixture, or combination with the precipitated sulphuret; and from which, in some peculiar instances, this process will not wholly free it. This will give rise to empyreuma, which, when the quantity of sulphuret is minute, will render the subsequent sublimation of reduced arsenic precarious. In some cases it is utterly impossible to wholly deprive the solution of animal or vegetable matter, and it will remain, and some of it fall down in combination or mixture with the sulphuret. Another difficulty is, that unless very great care be taken in regulating and applying the heat, so that the sublimation do not begin before the flux has attained a sufficient temperature, a portion of the sulphuret escapes decomposition, and sublimes, or sulphur alone sublimes, and when the crust of sublimed arsenic is very minute, obscures the result. But a most important objection is, that the sulphuret cannot be forced to yield above a third of the arsenic it contains." I have, after much and laborious inquiry, been induced to prefer the *arseniate of silver*, as superior to

every other preparation, for the purposes of medico-legal reduction; and this for the following reasons:—First, its bulk is sufficient to enable us to operate upon minute quantities with infinitely greater ease and precision.* Secondly, its superior specific gravity causes it to subside more quickly, even from saturated saline solutions; and hence it is more easily and speedily collected. Thirdly, it parts with moisture more readily, and does not cake, or attach itself to the capsule with that obstinate adhesion which renders the collection of the entire sulphuret, under similar circumstances so difficult; on the contrary, it is easily collected, and admits of being dried so thoroughly as to yield but little moisture. Fourthly, the salt itself presents an almost distinctive character in its brick-red colour. Fifthly, it yields on reduction, (cat. par.) nearly three times the quantity of metallic arsenic afforded by any other compound, (so far as I know,) arseniate of lead being excepted; and nearly half as much more as even this salt.

“The process, therefore, which I find to answer best is the following:—Dr. Christison’s directions are to be observed, and his plan precisely followed, till the sulphuret of arsenic is precipitated. The precipitate is to be allowed to subside, and the organic liquid poured off. The precipitate is then to be washed by the alternate affusion and decantation of distilled water after each subsidence. The sulphuret, after being thoroughly washed, is to be transferred into a deflagrating tube. When the quantity is very minute, its transfer is effected without loss in the following manner:—diluted ammonia is to be added till the whole of the sulphuret is dissolved, and the solution poured into the deflagrating tube; the precipitating jar is to be washed out with distilled water, the washings being added to the solutions in the deflagrating tube; acetic acid being now added in excess, the tube, with its contents, is to be gently heated, when the sulphuret is immediately precipitated.* The acetate of ammonia is to be poured off, and the precipitate is to be well washed in distilled water; the water is to be poured off; the sulphuret remaining at the bottom of the tube is to be rendered as dry as possible, by placing the tube by the side of a stove.† Nitrate of potass is next to be added, with which the sulphuret is to be deflagrated. By this process the arsenic of the sulphuret is peroxidated, and converted into arsenic acid, which unites with the potass set at liberty during the operation, and forms *arseniate* of potass. As soon as the nitrous acid, formed by the action of the nitrous gas, (evolved by the decomposition of the nitric acid of the nitre,) upon the atmospheric air is dissipated, and the tube has cooled, hot distilled water is to be added till the entire residue is dissolved. If the solution should be alkaline, which may happen if vegetable or other organic matters were present, in consequence of the formation of both carbonic acid and potass, or ammonia, a little acetic acid should be added, so as to render the solution perfectly neutral, or even very faintly acidulous. If the solution be now touched on the surface with a stick of lunar caustic, immediately a dense heavy brick-red precipitate falls down from the point of contact. The precipitate should be allowed to subside, and the caustic applied after each subsidence till the brick-red powder ceases to be formed. When the powder has subsided, the nitrous solution is to be poured off, and the precipitate is then to be well washed in distilled water till the washings, when evaporated upon platina foil, cease to leave any residue. The precipitate, which is arseniate of silver, perfectly pure, or nearly so, may now be transferred to a watch crystal, and dried either by the side of a stove or in a vapour bath. The dried salt is next to be mixed with boracic acid and recently-ignited charcoal, put into a proper tube, and reduced. Towards the end, the reduction may be aided by the cautious application of the flame of the blow-pipe. By this means a well-defined crust of metallic arsenic will be found lining the upper and narrow por-

* Boiling alone, by expelling the ammonia, would precipitate the sulphuret, but still not so completely as by adding acetic acid in slight excess.

† Either frequently assists the drying of precipitates.

tion of the tube; nor is there the slightest obstruction to the reduction from the presence of impurities."

The process here detailed, says Dr. V. will only apply to the arsenous acid and its soluble compounds; nitrate of silver precipitating pure arsenic, and by single decomposition. "Hence it is evident," he adds, "that if arsenic acid existed in the mixture, or any of its compounds, the precipitation of the vegeto-animal matter by nitrate of silver would at the same time carry down the whole of the arsenic acid, while the fluid for assay would be thus entirely freed from arsenic, and of course afford no indications whatever upon applying sulphuretted hydrogen. In order to obviate this inconvenience, when the circumstances are such as to afford no clue to the preparation to be sought for, or even but doubtful information on this subject, I should advise the following, which I have found to answer under almost every possible contingency. It is a modification of one of Orfila's processes, and will apply, in its extended form, to every preparation of arsenic.

"The contents and tissues of the stomach, the solids being previously cut into small shreds, are to be well boiled in nitric acid till as much of the animal matter as possible has been destroyed, distilled water being added according to circumstances. It is now to be filtered, potass added in slight excess to the filtered fluid; and it is next to be acidulated with acetic acid, when a stream of sulphuretted hydrogen gas is to be passed through it. If a yellow precipitate separate, it should be deflagrated with nitre, and treated as already directed in a preceding part of this paper.

"By the boiling with nitric acid, not only all the preparations of arsenic, soluble in this menstruum, and water, are taken up, but by far the greater proportion of the organic matters are destroyed. The soluble preparations of arsenic pass through the filter, and are subsequently precipitated by the sulphuretted hydrogen.* Such preparations, however, as may not be soluble in nitric acid and water, remain upon the filter, consequently it becomes an object of medical jurisprudence to determine their presence. For this purpose the products retained on the filter should be collected and dried, and they should then be projected in small masses, or portions at a time, into a Florence flask, containing a tolerably large proportion of nitre in a state of fusion, containing the heat. By these means only slight scintillations take place, and all the organic matter is destroyed, being converted into water, carbonic acid, potass, and ammonia. Any arsenic, under whatever variety or form it may have been present, is at the same time peroxidated and converted into arsenic acid, which, uniting with the alkali, forms a soluble arseniate. Nitrate of silver, applied as

* Rose says the free sulphur is always deposited along with the sulphurets precipitated from arsenical solutions by sulphuretted hydrogen. If this proposition be well founded, it will readily account for the obscurity and obstruction frequently experienced in the subliming of minute quantities of metallic arsenic in the operations under consideration. It will also account for the yellow, or yellowish red ring, which I have already noticed as occasionally surrounding the metallic crust obtained by the reduction of the sulphuret of arsenic by some of the preceding processes, and offers an additional reason for endeavouring to obtain a pure preparation of arsenic for reduction by the deflagration of the sulphuret. However, it may be observed, with respect to the assertion of Rose, "that the free sulphur is produced by the decomposition of the sulphuretted hydrogen which existed in the solution," that this decomposition is owing to the action of the acid, which he invariably uses for acidulating the arsenical solution, and which is the muriate, or hydrochloric acid. When the acetic acid is used for this purpose, there is never any separation of free sulphur, diluted acetic acid exerting no sensible chemical action upon sulphuretted hydrogen unless animal or vegetable matter be present; then free sulphur is deposited. If an acetic acidulous solution of arsenic, in distilled water, be precipitated by sulphuretted hydrogen, the whole of the precipitate is soluble in caustic alkali, or ammonia; nor will the slightest separation take place after weeks. But the case is different if animal or vegetable matter be present, or that the solution be acidulated with a mineral acid; then the alkali leaves behind a yellow residuum.

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apply nitrate of silver, which will precipitate arsenic acid only, because nitrate of silver does not singly decompose arsenious acid; the quantity of arsenic acid is then estimated by the weight of the arseniate of silver, and which may be proved by subliming the metallic arsenic, weighing it, and adding to this weight the equivalents of oxygen, the sum of which will give the quantity of arsenic acid. The arsenious acid may then be separated, and its quantity estimated by well known processes, which it is needless here to describe.

before recommended, precipitates arseniate of silver, which is to be reduced in the manner already explained.

"Such are the methods which, after much inquiry, I have been induced to prefer for the detection of arsenic and its compounds in medico-legal inquiries. The first objection is to obtain a solution of the arsenic, if possible. The next is to free this solution as much as possible from all volatile organized matter; because otherwise the resulting sulphuret is either retained in mechanical suspension, and therefore not separable without filtration, which should be avoided as far as possible, because in order to avoid loss, the whole filter, with its contents, must be deflagrated, and which renders the operation more intricate and troublesome: or which is of more importance as an objection is, that the sulphuret remains in solution in organic fluids, and therefore not precipitating, escapes analysis. When we can be certain that the arsenious acid is the form under which the poison has been administered, Dr. Christison's process is that by which the largest and purest proportion of sulphuret can be obtained. But under these circumstances the precipitated matters should not be lost sight of, for the arsenious acid is occasionally decomposed, and converted into sulphuret of arsenic, by sulphuretted hydrogen found in the stomach, an effect very likely to result from the instant action of the poison upon the coats of the viscus. Orfila also says that the arsenious acid is liable to be converted into arseniate of ammonia by the putrefactive decomposition of the animal textures, which sets in at long intervals after death. In such circumstances, Dr. Christison's process would throw down the arsenic, in the form of arseniate of silver, along with the animal matter, and it would thus escape analysis, unless the precipitate were examined. The destruction of the animal matter by nitric acid will not precipitate any of the soluble preparations of arsenic, and will dissolve many of those which are insoluble in simple distilled water. It also often peroxidates the arsenious, converting it into arsenic acid, a preparation far more soluble than the former. 'It is true,' Rose says, 'that the arsenious acid cannot be easily converted into the arsenic acid by means of nitric acid alone, but only by means of aqua regia.* If, however, the operator is desirous of converting it with certainty into arsenic acid, it is easily done by the addition of liquid chlorine; or still better, by transmitting a current of chlorine gas for ten minutes, and boiling to expel the excess of chlorine. There is also the additional advantage of destroying the colour of the solution by means of chlorine. There is one thing, however, with respect to arsenic acid, of which the operator should be apprised, that arsenic acid, as has been correctly observed by Rose, is precipitated by sulphuretted hydrogen gas far more slowly than arsenious acid; consequently, the action must be kept up longer, and the hydro-sulphuretted solution should be heated, to expel any excess of sulphuretted hydrogen. 'Of all substances,' says Rose, 'that are acted on by sulphuretted hydrogen gas, arsenic acid is the one whose precipitation requires the greatest length of time. Besides this, a much greater quantity of the resulting sulphuret of arsenic remains in solution in the hydro-sulphuretted liquor than is the case when the arsenious acid is precipitated. The dissolved sulphuret can, nevertheless, be fully precipitated, by exposing the mixture to a very gentle heat till it ceases to smell of sulphuretted hydrogen.† Hence, then, when the preparation is the arsenic acid or some of its soluble compounds, or that the operator has endeavoured to convert the mineral into arsenic acid, the solution should be heated to expel the excess of sulphuretted hydrogen, and sufficient time allowed for the separation and subsidence of the arsenical sulphuret. Even when arsenic acid is present, and which might be at once precipitated by the simple application of nitrate of silver, I prefer precipitating the sulphuret, because this, with the subsequent deflagration and reprecipitation, in the form of arseniate of silver, are so many distinct identifications of the poison, the ultimate reduction of which to the metallic state must remove every particle of doubt from even the most sceptical."

* Page 199, Griffin's Translation of Rose's Manual.

† Ibid, p. 202, 204.

33. *Is the Meat of Diseased Animals unwholesome?*—The following remarks on this subject, from the *Gazette Medicale*, for 20th of August last, though far from satisfying us of the innoxiousness of the meat of diseased animals, are nevertheless worthy of consideration. The subject is an interesting one, and should receive more attention than has hitherto been bestowed on it.

Among the investigations which the central council of health for the department du Nord has included in its report for 1830, to the prefect of Lille, there is a question which appears to us of very great interest, namely, whether the meat of kine attacked with tubercular affections proves injurious to the health of individuals eating it? The facts which led to this inquiry occurred recently at the Lille butchery; some of them are as follows:—In the middle of last January, a cow brought to market was suspected of being affected with the aforesaid disorder, and the police having been informed of it, summoned Messrs. Pommeret, a veterinary surgeon, and Simon Pers, a merchant butcher, both considered skilful in their avocations. After having examined the animal with great care, M. Pommeret declared it to be affected with the tuberculous disorder, which affection was limited to the lungs and pleuro costales, and appeared to have no connexion with other parts of the system: he was convinced that the animal in question, although slightly affected with tubercles, might be used as aliment, without producing any inconvenience to health.

Simon Pers the butcher, declared that the cow had its lungs and sides covered with small pimples, (boutons,) which constituted the disease called leprosy, on which account he thought its meat should not be exposed to sale, but buried, as not being fit aliment for man.

After this discordance in the opinions of two persons, both regarded as experts, the police called upon a third, who gave it as his opinion, that as the tuberculous affection was confined to the lungs and pleura, all other parts of the system appearing sound, the sale of the meat should be permitted, which was accordingly done.

A few days previous, a similar case occurred. A cow having been pronounced to be affected with leprosy and gangrene, was ordered to be buried. Messrs. Pommeret and Loiset, veterinary surgeons, repelled the charge of leprosy, none of the peculiar symptoms of which were found in the cow when examined, and which, besides, are only met within swine. The designation of corrupted, (pourri,) which had been given to the animal, was considered by them as absurd and ridiculous, as they only recognised upon it a tuberculous affection, without any trace of other disease, and decided that the meat of the animal might be used as food without any inconvenience, and that permission to sell it should be given, which was accordingly granted.

These two facts go to prove, that at Lille, in the course of a few days, two cows, recognised as unquestionably labouring under the tuberculous disorder, have been used as nourishment by many hundreds of people, without causing any complaint. It is also well established, that this disorder is of more frequent occurrence than is generally supposed, especially in winter. It is fair to infer from this, that the meat of animals may be eaten without risk, whatever disease they may have when killed? The author of the report replies to this question by adducing the following facts:—

In all the large towns, and more particularly in Paris, dogs, and especially the valuable wild animals in the royal menagerie, are fed almost solely upon the flesh of horses.

Now, many of these horses are not only sick when slain, but are brought to the place after having already died of diseases; all are cut up alike, and made use of without giving rise to any inconvenience.

During the revolution, the professors of the school of Alfort, near Paris, caused a great number of horses, affected with farcie and glanders, to be taken into the forest of Vincennes, and there slain. The flesh of these was all eaten as fast as they came, by the inhabitants of the neighbouring villages, who, nevertheless remained free from any disease.

In the year 1737, the following fact was communicated to the Institute, by M. Hamel. A herd of cattle on its way from Limousin, stopped at an inn at Pitiviers, in Gatinois; one of the finest not being able to go further, was sold to a butcher, who killed it at the inn. The butcher's boy having placed his knife between his teeth, his tongue swelled, and he died five days afterwards, with a general gangrene. The innkeeper, who received a cut on one of his fingers, was attacked with a swelling on his arm, and died at the end of a week. His wife, who had received some of the blood upon the hand, had a tumour form on this part, and recovered with difficulty. Finally, a surgeon, who had opened one of the tumours, and placed his lancet between his wig and forehead, was attacked in this part with an erysipelas, which lasted a long time. Notwithstanding all this, says Hamel, all the meat of this animal was sold, and chiefly to the richest families; more than a hundred persons who eat of it, both roasted and boiled, found it excellent, and no one experienced the slightest inconvenience.

A dog, after having bitten seven cows, died a short time after with confirmed madness. Other dogs which he had bitten, were killed on showing indications of the same disease. The cows mentioned, soon exhibited symptoms of madness, notwithstanding which, they were butchered and distributed to customers, without either the milk, which had been drawn up to the time they were killed, or the meat having occasioned the least complaint from any of the inhabitants of Montargis, the village where this circumstance occurred.

In 1814, the allied troops carried in their march large flocks of cattle which they had pillaged. These having been over driven and badly attended to, were all seized with intense inflammation of the stomach, intestines, and liver. This disorder became contagious, and spread its ravages through the whole country, traversed by the army, especially at Paris and its environs. But the meat of none of the animals which died or laboured under this disorder, was suffered to be lost, all of it having been eaten by the strangers, citizens, soldiers, and lower classes: it was even consumed in the hospital. Nevertheless, there were no bad effects upon the health of individuals observed, and on the contrary, the typhus, which had preceded this epidemic, disappeared.

In 1815, the epidemic which occurred at the commencement of summer, continued till January, 1816. During six months of this epizootic, the allied troops received in their rations no other meat than that of animals that had laboured under typhus. On no table was any other meat eaten, but such as came from sick animals, and yet no persons were incommoded.

We have extracted from the report of the members of the central council, a case of each of the diseases most common among herbivorous animals: these having been reported by persons worthy of credit, we conclude with the authors of the memoir, that the reprobation attached to animals killed in a state of disease, and the repugnance universally manifested to eating their flesh from a persuasion of its being noxious to health, are altogether prejudices, which, for the interest of trade and the general welfare of man, should be done away. This is likewise the opinion of Messrs. Huzard, Darcet, Chabaret, Flandrin, Dupuy, and of a host of other savans, who have given particular attention to matters relating to public hygiene.

34. *On Poisoning with Acetic Acid.*—In the *Journal de Chimie Medicale*, for August last, there is an account of some interesting experiments by M. ORFILA, relative to poisoning by acetic acid. The following are M. Orfila's conclusions:—

1st. That the concentrated acetic acid is an active irritating poison, capable of speedily producing death in men and dogs when introduced into the stomach.

2d. That it occasions sanguineous exudation, afterwards softening and inflammation of the membranes of the intestinal canal, and sometimes even their perforation.

3d. That in most cases it produces a blackish colour, either general or partial

of the mucous membrane of the stomach and bowels. This discolouration is the result of the chemical action of the acid on the blood; in fact, by its mixture with this concentrated acid, the blood, cooled and placed in a capsule, soon acquires the same tint.

4th. Common vinegar, in the dose of from four to five ounces, induces the same symptoms, and death in dogs of the common size, in from twelve to fifteen hours, unless it is vomited soon after being swallowed; in rather a larger dose it probably produces the same effects in man. If in opposition to this it is said that persons have swallowed a tumbler of vinegar without a fatal result, this doubtless depended upon the stomach of such persons being filled with food, and vomiting soon occurred.

MEDICAL STATISTICS.

35. *Births in Prussia*—During the four years, 1826, 7, 8, and 9, the number of births in Prussia was 2,011,283; being 40,081 births for every million of inhabitants. The greater number of births occurred in the least densely inhabited districts. Of the whole number of births 988,507 were single, 11,346 twins, one hundred and forty-four triplets, and three quadruplets. — *Memorial Encyclopedique, for August, 1831, from the Berlin State Gazette.*

36. *Statistics of Calculous Diseases.*—In our seventh volume, p. 499, we noticed some interesting remarks on this subject, by Mr. HEROUSSON, showing the infrequency of calculous diseases among seafaring people. Dr. YELLOLY has pursued the investigation, and in an interesting paper in the *Philosophical Transactions*, for 1830, communicates much valuable information.

Dr. Y. states that in Ireland, calculus diseases are very rare. In various extensive districts, from which he has had returns, stone is entirely unknown; and in others it occurs with extreme infrequency. Thus in the counties of Antrim, Armagh, Londonderry, Donegal, Fermanagh, Tyrone, Carlow, Kildare, Kilkenny, and Longford; in King's county, and in the counties of Louth, Wicklow, Clare, Kerry, Galway, Roscommon, Tipperary, and Mayo, containing together, a population of above 3,500,000, not a single case of lithotomy has occurred in any of their respective hospitals since their establishment; nor has one example among the poor of these extensive districts, come within the cognizance of the practitioners who have furnished Dr. Y. with returns.

In the counties of Down, Monaghan, Leitrim, Sligo, Limerick, and Waterford, and in Queen's county, the population of which amounts together, to about 1,200,000 persons, nine cases of stone operation only have occurred during the whole time to which the records of the hospitals, or the information or inquiries of their medical officers extend, and which embrace a period little short of forty years. This is at the rate of not more than 0.25 per annum.

Dr. Yelloly's suspicion mentioned in a former paper that the principal occurrence of calculous diseases is in towns, is strengthened by his subsequent researches.

Soldiers appear to participate with sailors in their immunity from calculous disease. It appears from Sir James Macgregor's report on the diseases of the British army in the Peninsula, that between December, 1811, and June, 1814, of upwards of 330,000 cases admitted into general and regimental hospitals, no case of calculus presented itself. In the 1st fifteen cases only four cases of calculus have occurred in the English army in Britain, and only one case has occurred in the army in Ireland. In the two great French military hospitals Gros Caillou and Val-de-Grace, in thirty years, only six operations of lithotomy have been performed, five in the former, (four of which were soldiers and one a soldier's child,) and one in the latter. During six years that M. Gama has been chief surgeon of Val-de-Grace, and eight years previously that he exercised the same func-

tions in the military hospital at Strasbourg, he has not once had occasion to perform the operation of lithotomy.

The first memoir of Dr. Yelloly, with the valuable memoirs of Mr. Hutchinson, and Mr. Smith, on calculous diseases will be found in the *Select Medico-Chirurgical Transactions* recently published by Messrs. Carey and Hart.

CHEMISTRY.

37. *Preparation of Hydriodate of Potash.*—Dr. WILLIAM GREGORY recommends the following process for the preparation of that salt. The iodine is to be dissolved with the aid of heat in a solution of pure potash. Enough potash must be added to form a solution having a pretty strong yellow colour, and if too much has been used so as to destroy the colour, iodine must be added till the colour is restored. The solution is then evaporated to dryness. The dry mass, consisting of iodate of potash and iodide of potassium, is now to be exposed to a gradually increasing heat, till it acquires a pretty full red heat, in a covered crucible of platinum or silver. The salt melts and the iodate of potash undergoes a decomposition exactly analogous to that which takes place in the chlorate of potash when exposed to a red heat. The whole of the oxygen, both of the acid and the potash, is expelled, and iodide of potassium remains; so that the whole of the iodine is now in the form of iodide of potassium, or hydriodate of potash. The heat must be continued at the same degree for about half an hour. When cold, the melted mass is softened out of the crucible with hot water, and dissolved in a moderate quantity of that liquid. If necessary, it is filtered, and the filtered solution is then evaporated to dryness by a gentle heat, when a snow-white crystalline salt is obtained. To ascertain whether the decomposition of the iodate has been complete, a small quantity of the salt is tested in a tube with alcohol, which ought to dissolve it entirely with the aid of heat. If any remains undissolved, and if the undissolved portion dissolves in water, and causes a white precipitate with acetate of lead, it is a proof that some undecomposed iodate is still present, and the salt must be again heated to redness until it stands the above test. A little practice renders it quite easy to know the proper degree of heat, and how long it should be continued.

The salt thus obtained is white and crystalline, deliquescent slightly in the air. It is easily soluble both in water and alcohol, especially if heat be applied. Its solution gives with a solution of corrosive sublimate a precipitate which at first is pink, but speedily changes to a bright scarlet. With acetate of lead it gives a bright yellow precipitate of iodide of lead, which is crystalline if the solution be slightly acid and very dilute.—*Ed. Med. and Surg. Journ.* Oct. 1831.

38. *Silic in Urinary Calculi.*—In a very interesting memoir in the *Transactions of the Royal Society*, for the year 1830, Dr. YELLOLY states, that in examining a dark brown calculus of oxalate of lime, of about five grains, weight, he found some minute, colourless, transparent crystals, diffused irregularly in the substance of the dark oxalate, which, from their great hardness, and their insensibility to all the usual reagents he suspected to be siliceous. To determine this he instituted in conjunction with Mr. Faraday the following experiments. "A portion of the calculus being separated, which contained about nine of these granules, the oxalate of lime, and whatever other substance might be in combination with it, was destroyed by heat, and afterwards by muriatic acid. The granules were then left transparent and colourless; capable of scratching glass and agate, and unaffected by nitric or muriatic acids. These granules were then dried and exposed to heat, with a fused mixture of carbonate of soda and potash. They gradually dissolved, evolving carbonic acid; and a solution of the mass when cold, being made in water, and neutralized by muriatic acid, gelatinized silica was thrown down from it. A slight excess of muriatic acid was then added,

and the whole evaporated to dryness. After withdrawing the muriate of potash and soda by distilled water, the silica was left in its usual white insoluble state. By comparing the magnitude of these granules, with some which were taken from a sand bath, it was calculated that they did not average more than the four-hundredth part of a grain in weight. The granules were thus unequivocally proved to be silex, and as they were imbedded in, and diffused through, oxalate of lime, a substance of known urinary origin, it is impossible to avoid the conclusion, that the production or deposition of these two substances, went on simultaneously." * * *

"There are only three instances on record so far as I know, of the existence of silex in urinary calculi. Two are mentioned by MM. Fourcroy and Vauquelin as occurring among six hundred calculi which they analyzed; and here the silex was found blended with oxalate of lime, as in the specimen which I have mentioned. The third was observed by Professor Würzer, and its principal ingredients were phosphate of lime and lithic acid, the weight of the calculus being eight hundred and seventy grains, and the quantity of silex being one per cent. In none of these calculi, however, is the magnitude of the siliceous particles stated."

Dr. Venables mentions the deposition of siliceous gravel in a paper in the Quarterly Journal of Science and Art, for Dec. 1829, and in a letter to Dr. Yelloly, he says, that in one instance after carefully filtering and putting aside for a fortnight, a portion of the urine from which some of the granules of silex had been derived, he found the inside of the glass studded in two or three places, with minute crystals of silex, strongly resembling those which were thrown down by the urine. The precise modes in which silex is capable of being held in solution in urine, is not ascertained.

MISCELLANEOUS.

39. *Violent Cholera at Clapham*.—About six o'clock on Thursday morning, the 13th of August, a son of Mr. Day, schoolmaster, at Clapham, aged about three years, having been previously in perfect health, was attacked with violent vomiting and purging; at twelve o'clock convulsions came on, and he continued in them until seven o'clock the following morning, when he expired.

The rest of Mr. Day's children, as well as his scholars, amounting in number to thirty boys, between four and fourteen years of age, remained all well the next day. This being Saturday, several of the scholars went home, to spend Sunday with their friends, leaving in the school twenty-two boys: of these, twenty were attacked, between three and nine o'clock on Sunday morning, with vomiting and purging of the most alarming character, attended with a degree of prostration which threatened many of them with immediate death. The appearance of the matters vomited was somewhat various in different individuals, depending probably upon the liquids previously taken. In some instances it was tinged with green bile, and was of a sub-acid smell, but in the great majority of cases it was colourless and inodorous. The stools also varied in appearance, but they were for the most part pale, consisting of mucous and muco-purulent matter, slightly streaked with scarlet blood.

The pulse varied also very much in different individuals: in the early stage of collapse it was very frequent, but so feeble as to be scarcely perceptible. When reaction took place, it had, of course, more force, but less frequency. The skin was in most instances cold and clammy throughout; in a few cases it was for a short time hot, and the face was, in these, occasionally flushed. There was a low delirium in some advanced cases, with dilated pupils; but the sensorium was not affected in the greater number of them. None of the little patients complained of pain in the stomach or bowels, beyond the griping which preceded the stools: There was, however, in a few of them, slight tenderness and some tension of the abdomen; and, as far as the exact course of the symptoms could

be ascertained in such a scene of confusion, it may be said generally, that the disease seemed to come on very much like the tropical cholera, with a short obscure stage of excitement, which was immediately followed by a state of extreme collapse; and that this, under the use of stimulants, was succeeded, in those cases which were of the best aspect, by a stage of warmth, gentle moisture, and general reëction. We have mentioned that the disease was accompanied pretty generally with convulsive action of the muscles; but it may be of importance to remark that this, which amounted rather to a kind of twitch, or subsultus, than to cramp, was confined to the upper extremities.

Sunday afternoon.—Another of Mr. Day's sons is evidently sinking, and a third, as well as several of the pupils, are in a state of dangerous collapse; others, again, although not out of peril, are rallying from the attack. The first question that suggested itself to the minds of the medical men in consultation was, whether the symptoms were referable to any poison received into the stomach. The scrutiny, however, which was instituted with reference to this point led to nothing satisfactory at the moment. It was then determined to examine the body of the little boy who was the first victim of the disease. On laying open the abdomen, the viscera presented themselves in a remarkably healthy state, as far as external appearances went. The liver was of a perfectly healthy size and colour; the gall-bladder was somewhat distended with healthy bile; the peritonæum, throughout, pale, transparent, and perfectly free from any appearance of thickening. On laying open the small intestines, however, it was observed that the peyerian plexuses of mucous glands were enlarged in patches throughout the intestinum ileum, raising internally, without destroying the mucous membrane covering them, into condylomatous elevations: lower down in the small intestines a few of the glandulæ solitariae were similarly affected, and in the ascending colon and transverse arch these latter glands seemed almost universally diseased, giving an appearance of pustulation, or rather tuberculation, to the whole interior of the bowel; the interstices of the tubercles here, as well as in the small intestine, being entirely free from vascularity. The mesenteric and mesocolic absorbent glands in the neighbourhood of the parts most diseased, were congested and enlarged. The stomach was quite healthy. The viscera of the thorax were likewise quite healthy. The contents of the cranium also, which were carefully examined, were entirely free from effusion, or other trace of disease.

The treatment which had been adopted, and which it was determined still to pursue, was, in the first place, to obey the great indication of preserving life by administering stimulants with opiates to those who were sinking from exhaustion and spasm. In the few instances in which the head seemed in the course of the reëction to be affected, it had been deemed right to relieve this symptom by the application of a few leeches to the temples. Besides these means, it was found necessary to apply mustard poultices to the abdomen, and to wash out the bowels with enemata, administering afterwards full doses of calomel and opium.

Early on Monday another of Mr. Day's sons, a boy of four years of age, sunk under the attack, twenty-three hours after its commencement. His body was carefully examined a few hours after his death, and exhibited the following appearances:—

The abdominal viscera, when first exposed, appeared, (as in the former case,) perfectly free from the traces of inflammation or other disease.

The examination of the bowels was commenced with that of the intestinum ileum, in which the mucous glands, both aggregate and solitary, were found generally enlarged, and the mucous membrane covering them in many places ulcerated. The interior of the cæcum, colon, and rectum, however, exhibited no appearance of diseased mucous glands, although the membrane itself was throughout uniformly congested, pulpy, and very easy separable from the subjacent tissue.

The examination was now pursued upwards from the ileum: the jejunum at the lower part was less diseased than the ileum, and as it approached the duod-

denum was more and more healthy; the duodenum, however, on being laid open, exhibited a pustulated appearance, depending on enlarged follicles, very similar to that of the colon in the former case. The mesenteric and mesocolic glands belonging to the diseased portions of the bowel, were enlarged and more vascular than natural. The liver was also quite healthy; the gall-bladder contained more than an ounce of perfectly healthy bile. It was remarkable that the contents of the bowels were nearly colourless, and had no feculent, or indeed any other peculiar odour. The stomach was perfectly healthy. The viscera of the thorax were likewise quite free from disease. In the head, the ventricles of the brain were distended with about three ounces of serosity; and the sinuses were somewhat more changed than usual with dark-coloured blood. The brain and its appendages were not otherwise diseased.

Most of the boys were removed by their friends in the course of Monday; many of them in a very alarming condition, all however recovered.

The food and drink of the boys at the school at Clapham, as well as the contents of the stomach and bowels, were carefully examined by Dr. Burton, the chemical lecturer in the borough, and no poison or other cause of disorder was detected in them.

It is now ascertained that a very foul drain, or cesspool, the situation of which was not previously known, behind the house, was accidentally opened, in making some alterations about the grounds, a day or two before the disease occurred: the contents of this receptacle were taken out, and thrown into a garden adjoining the play-ground, and separated from it only by a low and slight open paling. From this source it cannot be doubted arose the whole evil. Whether the sulphureted hydrogen itself was the agent in producing this pestilence, or whether that gas was merely the vehicle of some more subtle and abstruse miasma, it is not easy to say; but the boys were freely exposed to this effluvia, and almost every one of those who had been in the play-ground were attacked by the disease.

It is remarkable that the younger boys were most severely affected, and that a man who actually fell into the cesspool escaped altogether.

The appearances after death in the two cases which died, bore a striking resemblance to those delineated by Roideur and Wagler, as the results of the "morbus mucosus," which raged in Vienna between sixty and seventy years ago, and which probably owed its origin also to some analogous endemic effluvia. So far as the great intestine was concerned, the morbid change was very analogous to what takes place in the common fevers of this country.—*Lond. Med. Gaz.* August, 1831.

40. *On the supposed importation of the Cholera into Russia, by a Russian corps recently arrived from Turkey.*—In the review on cholera in the present number an account is given of the first appearance of that disease in Poland, and the opinion that it was introduced by the Russian army, in which the disease prevailed, is alluded to. Since that article was written, we have received a number of the *Journal Universel et Hebdomadaire*, containing an extract from the report made to the Royal Academy of Medicine by M. LONDE, the president of the medical commission sent to Warsaw by the French government. Dr. Londe says that the supposition that the cholera was communicated to the Polish troops by the Russian is contradicted by a document, which proves, 1st, that the cholera did not exist in the Russian corps engaged in the battle of Iganie; 2d, that not a single case of cholera appeared among the two thousand Russian prisoners made in the battle of Iganie, and who were completely isolated at Prag; and watched for ten days; 3d, that more cases of cholera occurred among the Polish troops which had not been at Iganie, than among those which had been there. Dr. Londe also quotes other facts in opposition to its importation, and also many in favour of its spontaneous development. Thus, a French woman who had been confined to her bed for two months, and received but few visits died in twenty-four hours of cholera, without any of the persons who vi-

sited her being affected. A sister of charity, also, who had been bed-ridden for six months, went to the balcony of her chamber, which looked out upon the Vistula, was attacked with cholera, and died in four hours. Dr. L. also cites the case of a porter who died of cholera, whilst his wife and children, who slept in the same bed with him, were not affected.

41. *Atmospherical Changes during the Prevalence of the late Influenza in England.* By J. A. HINGESTON, Esq.—The late “influenza” was, perhaps, modified or occasioned by atmospherical changes, or, as Sydenham would have said, by “the constitution of the year.” If the following sketch of the state of the weather be worthy of your notice, it will find a place in the columns of your journal; for it may, in some degree, account for that excitement of the air-passages of the human body which has so lately prevailed, and been denominated “influenza;” and it may probably explain the cause of that mental and bodily debility which accompanied or followed that singular affection. It will be seen that the respiratory mucous membranes were first parched and afterwards moistened by the changes of the atmosphere, and that the whole body was first excited and then depressed by the same causes. Such circumstances will always controul and direct the conduct and practice of a thoughtful man.

During the month of May the weather was unusually variable; the barometer rising and falling suddenly, and the thermometer standing one day at 80 deg. Fah. and a few days afterwards at 32 degrees; the wind was prevailing steadily from the north-east. The month commenced with heavy clouds, murky storms, copious precipitations of rain, and remote thunder; the thermometer ranged from 55 to 60 degrees, and the wind blew for a few days from the west and then shifted round to the north. This condition of atmosphere was succeeded by an over-cast sky, with intervals of sunshine, a keen cutting wind from N. E., frost, ice, and snow; the thermometer rapidly sinking to 32 degrees. Great-coats which had been thrown off, were resumed, and the fire-hearth became acceptable. By the middle of the month the weather cleared and became warmer, the sky brightening; a high blustering wind prevailed from N. E., drifting before it clouds of dust from the roads, the thermometer ranging with celerity between 62 and 52 degrees. During the severest interval of this weather ice was formed upon the ponds at night, the early fruits were partially blighted, the petals of the new-blown rose dropped from the shrub, and the hedge-row box seemed, as it were, singed—“the frosty air-burnt froze.” The north-east wind was heightened into a gale, by which several vessels were drifted from their moorings in the pool of the Thames; and a heavy atmosphere, a calm, and a soaking rain, followed. From this time (20th) to the end of the month, either a gray mist, with a hot sun, 80 degrees, occasionally gave way before a gelid wind 40 degrees from N. East., the usual forerunner of storms and thunder, or the soil became dry and dusty under a slight sunshine with fleeting cloudlets, or a sultry sun gleamed through a hazy atmosphere. The thermometer stood at night 32 degrees, and in a day varied between 50 and 80 degrees. A pelting rain, N. 50 degrees, and a fine, clear, breezy day, W. 60 degrees, closed the month. Then followed the month of June, remarkable only for a high temperature, a singular humidity of air, a soft wind from the S. W., and a bright hot summer’s sun. During the first days of the month, the sunshine was interrupted by a light rain; once by clouds, rain, and a gale from north 40 degrees; and occasionally by transient hail-storms, and remote thunder. The thermometer ranged between 40 and 80 degrees, but it generally varied between, 75 and 60 degrees, and this was the month in which the influenza, so well described by Dr. Burne (see Med. Gaz. July 2d, 1831,) made its appearance.— *Lond. Med. Gaz. Aug. 1831.*

AMERICAN INTELLIGENCE.

Case of Chief Justice Marshall.—In our last number we stated that the operation of lithotomy had been performed upon the venerable Chief Justice of the United States by our esteemed collaborator, Professor *PHYRICK*, and that the patient was doing well. We have now the gratification of announcing the complete success of the operation, and of communicating the following particulars, with which we have been politely furnished, of the case.

Between two and three years since, Chief Justice Marshall, whose age at present is about seventy-six years, began to experience uneasiness in voiding his urine, which soon increased to severe pain whenever he discharged it. Walking quickly, or any sudden motion of his body, occasioned him much pain, and riding on horseback not only had the same effect, but caused his urine frequently to be tinged with blood.

On the 29th of September last he consulted Dr. P. respecting his complaint, and submitted to the necessary examinations. A bougie of full size passed easily into the bladder, which proved that no obstruction existed in the urethra. The state of the prostate gland was next examined in the usual way: this was found to be somewhat enlarged, and three hæmorrhoidal tumours were noticed—they were free from pain, nor had they for a considerable time caused any inconvenience. On the following day a common sound was introduced into the bladder; at first no stone could be felt, but by moving it in such a way as to cause its extremity to pass to the left side of the bladder, a calculus was found, and the noise from the stroke of the end of the sound against it was distinctly heard by those present at the time.

As the calculus had only been felt when the end of the sound was passed to the left side of the bladder, it was determined to vary the position of the patient's body, to ascertain whether the situation of the stone in the bladder could be changed in that way, but in every position it could only be felt when the end of the sound was passed to the left side of the bladder. These trials induced a belief that the stone had in some way a fixed position in the cavity of the bladder. On inquiry, it was found that he had never voided any fragments of a calculus, or any small stones until the day before his arrival in Philadelphia, when he noticed a small, smooth stone discharged with his urine of the size of a common pin's head. This was the only one he had ever voided with his urine, though that fluid was always discharged in a full stream.

The operation of lithotomy being determined on, was performed on the 13th day of October last, in the usual manner. After dividing the neck of the bladder with the gorget, a finger being introduced into the wound, the body of the prostate gland was found considerably enlarged, and the third lobe projected upwards, forming a tumour of the size of the end of one of the fingers.

The finger not being long enough to reach into the cavity of the bladder through these tumefied parts, it was impossible to feel the stone; a pair of forceps, moderately curved, were next introduced, on withdrawing which, the doctor was surprised to find that instead of a large stone he had only removed a number of small ones, which he at first supposed to be fragments of a large calculus, broken by the grasp of the forceps. On examining attentively the pieces removed, he found they were not fragments, but each of them was a separate stone, with a very smooth, polished surface, from which a small projection arose; and on some of them two or more of these projections, at the extremity of each of which a small depression or hole was noticed passing into the stone a little way. The operation was completed by extracting these

small calculi with forceps, and by injecting barley water to wash out any that might escape the forceps. It was estimated that more than one thousand of these small calculi were extracted. They varied much in size from that of a large pea to that of a pin's head, and being analyzed by Professor Hare, were found to be composed of uric acid. The Chief Justice bore the operation with uncommon fortitude and patience, not making any exclamation during the whole process.

The symptoms consequent to the operation were mild, and we had the pleasure to see his cure completed in less than five weeks, when he was able to return to Richmond, and to resume the duties of his exalted station on the bench. It is believed that each of these small stones was attached by a small fibril to the surface of a tumour growing out from the left side of the neck of the bladder, and entering the small depression noticed on the little projections above-mentioned. Had they been loose in the bladder, some of them must, we presume, have passed out with the stream of urine.

Structure of the Lungs.—We have been favoured by Professor HORNER, of the University of Pennsylvania, with the sight of a beautiful preparation made by him, showing the existence of a lateral communication between the cells of the lungs. The preparation was made in the following manner:—After filling the pulmonary arteries and the pulmonary veins with minute injection, the ramifications of the bronchia with the air-cells, were distended to their natural size by an injection of melted tallow. The latter being permitted to cool, the lung was then cut into slices and dried; the slices were subsequently immersed in spirits of turpentine and digested at a moderate temperature for several days; by this process all the tallow was removed, and the parts upon being dried presented the air-cells empty, and of their natural size and shape. Preparations when thus made show the air-cells as generally about a twelfth of a line in diameter, and of a spherical shape, the cells of each lobule communicating freely like the cells of fine sponge by lateral apertures. The lobules of the lungs however are found to communicate with each other only by branches of the bronchiæ, and not by the contiguous cells.

The opinions of anatomists are generally inclined to the insulation of each air vesicle excepting the little tube of the bronchia which runs into it, but these preparations go to show that the anatomists as Haller, Monro, Secundus, &c. who have believed in the direct communication of the air-cells, are on the right side of this question.

Sphincter Vesicæ.—It appears also from the dissections of Dr. HORNER that the sphincter muscle of the neck of the bladder surrounds the inferior two-thirds of the latter, being placed as described by Mr. Charles Bell under the mucous membrane of the part, but that the two ends of this muscle are inserted respectively into the posterior part of the lateral lobes of the prostate, whereas a plane of vertical fibres is at the superior third of the same orifice, immediately below the lining membrane, which plane arises from that part of the prostate above the urethra and spreads itself vertically for an inch or so on the adjoining part of the bladder. These arrangements are made evident by steeping a bladder for some time in spirits of wine, so as to condense its structure—then by removing its lining membrane at the part indicated, and raising up the muscular structure with the end of a scalpel handle instead of dissecting it.

On the Wax Myrtle. By WILLIAM M. FARNESTOCK, M. D.—Since the publication of our paper on the medicinal properties of the *Myrica Pennsylvanica*, in the second volume of this Journal, we have frequently been called upon from many respectable sources for further information respecting the natural history, the distinguishing characteristics, the chemical properties, &c. of the plant. We now add a summary of all we know upon the subject in reply to those inquiries.

Myrtle wax is a concrete oil, obtained from the myricæ. The shrub which

yields it abounds in many parts of the United States, particularly in Pennsylvania, New Jersey, Delaware, Virginia, the Carolinas, and Louisiana. It varies in height from three feet to the size of the common cherry tree, and bears a small berry, covered with a shining down of a gray-ash colour, from which the wax is prepared.

Pursh distinguishes four American species, viz.

Gale.—1. *M. foliis cuneato-lanceolatis apice serratis obtusis, amentis masculis imbricatis, squamis acuminatis ciliatis, fructibus squamoso-capitatis.*

In boggy grounds in Canada, and about the lakes and high mountains; plentifully on the Broad mountain, Pennsylvania. $\frac{1}{2}$ May, v. v. a low shrub, like all the following, of agreeable sweet scent.

Cerifera.—2. *M. foliis cuneato-lanceolatis apice rariter serratis acutis, amentis masculis laxis, squamis acutis, fructibus globosis minoribus.*

Pumila & *M. lineari-lanceolates.*

In shady, dry woods: Virginia to Carolina, $\frac{1}{2}$ In Carolina and Florida. $\frac{1}{2}$ May, June, v. v. a shrub, sometimes more than twenty feet high.

Carolinensis.—3. *M. foliis cuneato oblongis grosse dentatis amentis masculis laxis, squamis acutis, bacces globosis majoribus.*

In wet places about rivers and swamps. New England to Florida. $\frac{1}{2}$ May, v. v. not above three or four feet high.

Pennsylvanica.—4. *M. foliis oblongis untrunque acutiusculis integerrimis aut apice rarer sub-serratis margine, revolutis, amentis masculis laxis, squamis acutis, bacces globosis majusculis.*

In shady rocky situations: Pennsylvania and New Jersey. $\frac{1}{2}$ May, v. v. not above three feet high. It is generally confounded with the preceding, but is a very distinct species.

Toscan, in a memoir inserted in his work entitled *L'Ami de la Nature*, details the process of collecting the berries and preparing the wax, which may be summed up in a few words, namely; after the berries are gathered, they are boiled in water, which should be sufficient to cover the berries half a foot in the pot; skim the wax off which rises to the surface, which is then to be laid on a cloth to drain off the water with which it is mixed. It is then dried and melted a second time to render it pure; afterwards it is formed into cakes.

This substance is a concrete oil of moderate hardness and consistence; it has in part the tenacity of bees-wax, though without its unctuousity; along with this it also possesses in some degree the bitterness of the resins. The colour of the myrtle wax is a pale green; the shades of the different species are somewhat varied; in the most of them the green has a tendency to a dirty gray; in others it is lighter and more transparent. Its specific gravity is about 1.0150. It is fused at the temperature of 190° Fahr.; by sufficiently increasing the heat it burns with a peculiar, clear and white flame, producing little smoke, and during the combustion emits an agreeable aromatic odour. According to Dana's analysis the berries contained wax, 32.00; resino-extractive, 5.50; black powder, 15.00; kernels, 47.00; loss, 0.50.

Bostock, in his analysis of the wax, found—1st. That water has no action upon it, either when cold or at the boiling point. 2d. Alcohol, when boiling, dissolves it sparingly, and it precipitates again on cooling. 3d. Sulphuric ether, at the common temperature of the atmosphere, dissolves it only in small quantities, but acts upon it rapidly when boiling, the greater part of which separates as it cools. 4th. Rectified spirits of turpentine, at the temperature of the atmosphere softens the wax; assisted by heat, one hundred grains of the spirit dissolves six grains of the wax, part of which separates as the fluid cools. 5th. When boiled with liquid potassæ the fluid becomes turbid, and the wax rises to the surface nearly without colour, in a flocculent form. In this saponaceous state it has lost its inflammability and fusibility, and forms an opaque solution with water. 6th. Pure ammonia exhibits with it phenomena in many respects similar to those produced by the fixed alkalies, though in a less degree than that resulting from the action of the potash. 7th. The mineral acids are but

little effect upon it: the sulphuric, when assisted by heat, converts it into a dark brown mass; the nitric changes the colour from green to a pale yellow; and by long digestion in muriatic acid, it becomes a bright orange. From these results, obtained in an extended course of experiment, which may be found in *Nicholson's Journal*, vol. 4, Dr. Bostock considers the myrtle wax a fixed vegetable oil, rendered concrete by the addition of a quantity of oxygen. It seems to hold the same relation to the fixed, that resins do to the essential oils of vegetables.

The plant is easily cultivated, and independent of its medicinal virtues is very ornamental. Much expense and labour has been incurred to transfer it into the gardens of Europe. Thiebault, of the academy of Berlin, states that the late Mr. Sultzer, author of the Dictionary of Fine Arts, obtained from Frederick the Great, a portion of waste grounds of considerable extent on the banks of the Spree, in a place called the Moabites, which he converted into a garden. Among the other remarkable things he made a plantation of foreign trees, in successive rows, in form of an amphitheatre. In the southern row the wax tree was placed. All the visitors, we are informed, took particular notice of this shrub in preference to all others, on account of the delicious odour of its leaves, which they preserve a very long time.

We are inclined to attribute all its therapeutic properties to the colouring matter or pellicle surrounding the kernel, and which imparts the colour to the wax: from the circumstance that the wax most deeply tinged with this substance is the most efficient, and from the fact that the liquor in which it has been boiled, when evaporated to the consistence of an extract, has been most successfully employed, according to M. Alexandre, in the most obstinate dysenteries. What may this astringent colouring principle be, Cadet* inquires, which is only soluble in alcohol, which is not precipitated by water, and has so little attraction for alumine? To discover it, it is necessary to make a course of experiments which the small quantity of substance we were in possession of would not permit us to undertake.

We have not used any of the article, from the circumstance of the great difficulty of procuring good, since our former communication, but we would urge a further investigation upon those gentlemen of the profession in the immediate vicinity where it grows. The advantageous properties that this tree appears to possess, says M. Cadet, ought to have induced philosophers to make inquiries to ascertain the various properties of the vegetable, and what attention its culture might require; it has long been considered merely as an object of curiosity.

Contributions to the Pathology of Traumatic Tetanus. By W. W. VALE, M. D. —It is becoming more and more obvious, that great improvements have taken place within the last few years, with regard to every department of medicine, and not the least among these, have we been conspicuously enlightened on obscure pathological subjects.

In the course of our professional duty, we are called upon to witness many humiliating and painful circumstances, to find our best efforts fruitless, and too often all the good that we can do, is confined to the discoveries we make of the seat of disease, and consequent cause of death.

Whilst a student in the office of Professor Prioleau, of the Medical College of South Carolina, we first witnessed the form of this dreadful malady, succeeding in two instances to very trifling injuries. Since that period, (1825,) four instances have come under our notice, three of them in our own practice, all in coloured persons, and all but one fatal. In two of the number, it succeeded to a puncture in the sole of the foot, in one to an abrasion of the cuticle on the instep, in one to a detachment of a piece of the internal maleolus, and in two to a fracture in the hand and wrist. We lost two of our cases—they were both actively treated, but our efforts were vain; in the case of recovery, the means

* *Annal. de Chemie*, t. 44.

made use of were active cathartics, (turpentine and oil,) and blisters to the spine. Permission being obtained to examine the bodies, we give the results, with one qualification, and that is, engorgement of the vessels of the brain and spinal cord, may take place from the effects of gravitation after death.

Mary Hinson, æt. 14, died on the fifth day from the accession of tetanic symptoms; her body was examined nine hours after death. With some difficulty, the vertebral canal was laid open from the cervix to the sacrum. To judge from *appearances*, active inflammation had existed upon its investing membrane, the vessels of the pia mater being *very conspicuous, numerous, and greatly distended*. Nothing remarkable in the aspect of the tunica arachnoidea, or the medulla.

On tearing up the skull-cap, much blood escaped from the laceration of the vessels of the dura mater; the brain being exposed, presented no unusual appearance, nothing indicative of congestion, or any extravasation.

Thorax.—Lungs very firm, from the accumulation of blood. Heart healthy.

Abdomen.—Viscera natural, considerable accumulation of feces, (semi-fluid,) offensive, dark coloured, and having a peculiar *black sediment*, which we had never observed before, resembling pulverized charcoal. On mixing a small quantity of it with water, it would appear to be soluble; by rest, however, it would subside, and remain in the bottom of the vessel, leaving the water transparent.

The disease in this instance was naturally referred by us to the wound in the foot, the patient having stepped on a nail, which penetrated to the depth of an inch and a quarter. At the time of death it had progressed favourably towards cicatrization.

CASE II.—Rebecca Peterson, æt. 47, died on the third day of the disease; examined twelve hours after death.

Spinal cord healthy, vessels of pia mater *much congested*, serous effusion between it and the tunica arachnoidea, no other part examined.

The production of tetanus in this case was attributable to a puncture in the hand by a fork, on the 24th of May—death on the 31st.

In the first, the wound was inflicted on the 16th of June, tetanus on the 19th, death on the 24th. Surrounded by an abundance of filth, and living in comparative obscurity, these individuals presented a revolting picture to humanity, and were scarcely noticed by any of their colour, though living under the same roof. No compensation could be expected, and we were informed that medical advice had been solicited and refused on that account.

On the state of the Dew point as connected with the prevailing Influenza. By JAMES P. ESPEY, of Philadelphia. [Communicated in a letter to Dr. HAYES.]—On the 28th of November, 1831, there was a sudden and uncommon depression of the "Dew point," from 42° Fahrenheit to 21°, and on the 29th it was down to 10°.

Its mean temperature since that time has been 14°, and on the 17th and 18th of December, it was below zero. The mean temperature of the air for this period has been 25°.

A thought has occurred to me, that the epidemic influenza, which has prevailed during this period, may have taken its rise from the extreme *dryness* of the air, rather than from its *coldness*.

I leave it however to the medical profession to determine, whether the immense quantity of vapour, which is exhaled from the lungs when the "dew point" is low, more than when it is high, produces any change in physiological action, and if it does, what that change is. I confine myself to facts and principles, founded on the most unexceptionable experiments, from which it appears that during the last twenty-eight days, a man of ordinary size has exhaled from his lungs every day about 859 grains more than he did each day of the preceding month, when the dew point at a mean was 36°.

It is known, from the experiments of Gay Lussac and Dalton, and others, what quantity of vapour is contained in a cubic inch of air of any given "dew point." According to their experiments, a cubic inch of space, whether that space contains air or not, if the temperature of its "dew point" is 14° Fah. contains .00073810 grains of vapour, and a cubic inch of air or space, whose "dew point" is 36° , contains .00156156 grains of vapour. And a cubic inch of air, or space without air, whose "dew point" is 94° , contains .00938243 grains of aqueous vapour.*

This last temperature, 94° , I have found to be the "dew point" of air expired from the lungs, whatever may be the temperature of the "dew point" of the air previous to inspiration. This you may easily try by breathing on a tumbler of water of that temperature. Consequently, the quantity of vapour expired is, at all seasons, .00938243 grains, for every cubic inch inspired. Now, if we subtract from this the quantity which the air contained for each cubic inch inspired, the remainder will be the quantity for each cubic inch evaporated from the lungs; and if this quantity be multiplied by the number of cubic inches of air inspired in a day, the product will be the number of grains of aqueous vapour evaporated from the lungs in a day.

For example, if a cubic inch of air is inspired when the "dew point" is 14° , which contains as above, .00073810 grains of vapour, when it is expired, it will contain .00938243. Subtract the former quantity from the latter, and the remainder, .00864433 grains, is the quantity of vapour exhaled from the lungs above that which is inhaled. Multiply this by 1152000, the number of cubic inches inhaled in a day, (according to Jurine, Minzius, Thompson, and Gordon,) the product, 98684, or 1 2-5 pounds avoirdupois, will be the quantity actually evaporated from the lungs in a day when the "dew point" of the atmosphere is 14° .

By making a similar calculation, it will be found that when the "dew point" of the atmosphere is 36° , the actual quantity of aqueous vapour evaporated from the lungs in a day, above what is inhaled, is 9009 4-70 grains, which is, as mentioned above, 859 grains less per day than in the former case, almost 2 oz. avoirdupois.

From the principles here stated, it will readily appear that the quantity of water evaporated from the lungs in summer, when the mean "dew point" is near 70° , is still less.

For example, the quantity of vapour in a cubic inch of air, whose "dew point" is 70° , is .00461639; this subtracted from .00938243, the quantity always contained in a cubic inch of air, the moment it is expired, leaves .00476604; and this multiplied by 1152000, as before, gives 54904 grains of water, evaporated from the lungs in a day, when the "dew point" of the air inhaled is 70° , which is about 5-9 of the quantity which has been evaporated from the lungs per day for the last twenty-eight days. I am aware that the true principles of inductive science require many coincidences between a sudden variation of the "dew point," and any epidemic to justify us in drawing the conclusion, that such variation is the cause of the disease—and I would not have troubled you with this communication if it had nothing to recommend it, but the suggestion, that the sudden depression of the dew point might be the cause of the existing epidemic.

Philadelphia, Dec. 27th, 1831.

Influenza.—The influenza from which we are at present suffering in this country, prevailed in China during January, 1830, and in Manilla in September of the same year. It preceded the cholera both in Russia and Poland, but we do not know the exact period at which it appeared in those countries; it prevailed in France during May and June last, in England during June and July, and about November began to prevail in this country. Mr. Lawson, surgeon of H. C. ship *Ingles*, states that in China the symptoms of the disease were, "pain in the head, more es-

* See Edinburgh Encyclopedia, article Hygrometry.

pecially over the frontal sinus, tough, discharge from the nose, sense of rawness in the throat and chest, rather than severe pain, great prostration of strength; in some of the cases there was pain in the epigastrium, as well as across the loins, with severe aching pains in the limbs, pulse frequent, but generally soft. The febrile symptoms, in most cases, had entirely subsided on the third or fourth day, and the cough, in the majority of instances, in about the space of a week from the commencement. There were however some exceptions, where a troublesome cough remained for two or three weeks."

Mr. George Bennett gives the following description of the disease as it occurred at Manilla. The commencement of an attack from this disease was with a general lassitude, followed by pains referable to the lumbar region, and in some cases with muscular pains over the whole body; an increased secretion of mucus in the nose, as also in the fauces and bronchia; intense headache, principally referable to the frontal sinuses; tongue white; eyes suffused with tears; skin hot; much thirst; a rawness of the throat; cough, particularly troublesome at night; in some cases a restriction across the chest was much felt; appetite impaired; bowels generally costive; quick pulse; and in those of very plethoric constitutions, (in whom the attacks are severer,) a very quick full pulse; flushed countenance. The symptoms varied in intensity in different persons; some having the fever and concomitants so high, with a flushed countenance, and a pulse so full, strong, and quick, as to have almost induced me to resort to venesection; other cases again assumed a very mild character, but in a very slight degree incapacitating the patient from pursuing his occupations. The patients were worse during the night than during the day, the accession of the fever and cough being much greater at that period. After the patients had in some degree recovered, a troublesome cough, attended in most cases with much expectoration, remained, and in delicate constitutions may be apt to lay the foundation of pulmonary disease.

In Paris the disease is described as commencing with coryza, head-ache, lachrymation and sneezing; dryness, pain and tickling of the throat; difficulty of swallowing and cough, sometimes dry and at others accompanied with expectoration of clear, or thick mucus. To this first series of symptoms a more or less marked derangement of the stomach and bowels was added. There was loss of appetite, and sometimes nausea and vomiting, but when vomiting occurred it was generally after violent fits of coughing. There was also lassitude and feeling of soreness in the limbs and more or less depression of spirits. There was often no fever; when it did exist, it was commonly continued, moderately intense and terminated with abundant sweats. In some plethoric persons the cerebral symptoms and those of pulmonary congestion were very intense. In one case delirium continued for four days, and in another the head-ache was extremely violent, and yielded only to the repeated application of ice. In a few cases there were abundant and obstinate hæmoptysis. Previously to the appearance of this epidemic in Paris catarrhs had become frequent; as the hot weather came on, the catarrhal state of the respiratory apparatus almost entirely disappeared, but vomiting and diarrhoea which had been observed in a few of the patients who were affected with the influenza, became more frequent and violent; in many persons there was no vomiting, but only dysenteric symptoms, in others a simple bilious flux. Finally, during the month of August, spasms of the limbs and body were joined in some patients to the symptoms just described, constituting sporadic cholera.†

In England the epidemic is stated to have commenced like a common cold, but the constitutional disturbance was much more considerable than this, the toral symptoms seemed to account for. "Running at the nose and over the brows, are the most frequent local affections; which, however,"

* Medical Gazette, Vol. VIII. p. 825. † Gazette Medicale, June, 25th, 1831, and Sept. 10th, 1831.
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ten accompanied or succeeded by cough, and sometimes by nausea and an irritable state of the bowels. The feelings of languor, oppression, and discomfort, are always considerable, and sometimes very distressing; being occasionally attended with anxiety at the chest and tendency to faint. Some have severe muscular pains, of a rheumatic character, with tenderness of the integuments. The attacks generally last from two days to a week, passing off with perspiration, and, in the worst cases leaving the patients considerably reduced." Dr. Burne says that the head is heavy and painful, and is jarred distressingly by the paroxysms of coughing, which gives the sensation as if the head was splitting.

In this city the disease has usually come on with catarrhal symptoms, generally attended with intense head-ache and gastric derangement. Delirium has been by no means an uncommon attendant on the disease, and in some cases the prominent affection has been that of the head, and even occasionally it has been a fatal one. Great depression of spirits has been occasionally present. When the catarrhal symptoms have predominated, there has often been much pain in the side, with rheumatism of the intercostal muscles and sometimes of the loins and limbs. The cough has been usually dry at the commencement, and sometimes occurring in paroxysms; the efforts to cough cause great racking of the brain.

We have seen the disease commence with vomiting and purging, like cholera, followed by a catarrhal affection of the respiratory mucous membrane, and rheumatic pains in the chest and limbs. The tongue has been in almost all cases exceedingly loaded, but there has been little or no tenderness of the abdomen on pressure.

In the treatment, venesection has been nearly always demanded, and sometimes it has been necessary to repeat it two or three times. After general bleeding, local depletion by cups along the dorsal and lumbar vertebrae, have been exceedingly useful in relieving oppression of the chest, when it was present, or the rheumatic affection of the limbs. Cups to the back of the neck and to the head, relieved the cerebral symptoms. Gum water, rice water, lemonade, and the like, for sole diet, and mild laxatives have, for the most part, completed the cure.

Treated upon these general principles, patients have nearly always speedily convalesced, and their recovery has been complete. Where, on the contrary, active depletion has been neglected at the commencement, the case has frequently terminated fatally; or engorgements of some of the viscera, particularly of the lungs, have taken place, and the foundation has been laid for incurable pulmonary disease. Our space does not permit us to enter into any further details respecting this complaint at present, but we shall probably hereafter recur to it. We should be pleased to receive from our correspondents accounts of the disease, as it has appeared in different parts of the country, so as to show the various phases it has no doubt exhibited.

Cerebro-spinal Axis of Man, with the origin and first Division of the Nerves.—Our readers are already acquainted with the beautiful map of the great sympathetic nerve, drawn by Mr. ANCOCK. The same gentleman now offers to the profession a companion to it, in a map of the nerves going off from the base of the brain, and from the spinal column. It is copied from a drawing made by J. Manec, with a translation of the references by Dr. Pancoast. The whole is exceedingly well executed, and worthy of the patronage of the profession. We hope the same enterprising gentleman will present us next with a magnificent drawing of the fifth pair of nerves and its branches.

We are compelled, from want of room, to omit notices of various new and of several proposed publications.

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The precipitate obtained by treating the acidulous extract of cinchona by alkalies, comprise, beside Quinine and Cinchonine, certain additional organic alkalies.

These new organic alkalies, especially the principal one, which Dr. S. calls *Chiniodine*, are intimately united with subacid resinous substance.

The new alkali exists in the cinchona barks, associated with Quinine and Cinchonine, and are all precipitated together in the above extract. The *Chiniodine* resembles the other alkalies of Cinchona, in its solubility, colour, and taste; but it is distinguished from them by its activity, and its greater capacity of

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saturation, and its alkaline reaction, and its intimate combination with an extractive matter. Dr. Serturmer further states, that as a medicine, Chiniodine is one of the most precious agents of the *materia medica*. It is not only a better febrifuge than Quinine and even than the bark in substance, but it possesses many other therapeutic properties which, admitting that they exist in the bark itself, are not to be found in Quinine. It was prescribed by Dr. S. in the dose of two grains, three times a day. In all the cases treated by the new remedy, the fever was cut short without relapse, and in every instance the concomitant symptoms, such as paleness of the face, loss of appetite, œdema of the legs, &c. disappeared in a shorter time than is usually the case. The medicine failed only in a single instance. The quantity necessary for a cure was generally from 12 to 24 grains.—(See *Journal des Progrès*, vol. 3, for 1829.)

The above extract can be conveniently made into Pills with Liquorice Powder or Starch, and it can be made into a solution with water by the addition of one drop of Sulphuric Acid to each grain of the extract.

The following formula is an eligible mode of exhibition which produces a beautiful transparent solution.

R.	Precipitated Extract of Bark,	- - -	48 grains,
	Acid Sulphuric,	- - -	40 drops,
	Alcohol,	- - -	2 drachms,
	Aqua Cinnamon,	- - -	4 ounces.

M.

Drop the Sulphuric Acid in the Alcohol and about two drachms of water which should be used to triturate and dissolve the Extract, after which the remaining water should be gradually added. If Alcohol is inconvenient it can be made without it.

The above extract will always be sold at about one-third the price of Quinine; and as it is of equal if not superior efficacy to the latter it will no doubt be extensively used, and can always be had at

GEORGE W. CARPENTER'S

Chemical Warehouse, No. 301, Market street, Philadelphia.

CARPENTER'S

OLEO-RESINOUS EXTRACT OF MUSTARD, OR OIL OF SINAPINE.

The seeds of the *sinapis nigra* are admitted to be one of the most useful and extensively used rubefacients we possess. The mode of using this article as a rubefacient is to make a paste with the farina of the seeds and vinegar, which is to be applied in the form of a poultice. This is frequently attended with difficulties and considerable inconveniences, and mustard differs so essentially in quality, that little dependence can be placed upon its certainty of effect. It is almost always more or less adulterated, and the flour which is sold from the stores is frequently more than half composed of foreign and inert matter. At the suggestion of our distinguished Professor, Dr. Physick, I have made a series of experiments on the mustard, with a view of ascertaining the active constituent principle, and separating it in a form best adapted for its application as a rubefacient, and I am pleased to find that my experiments have resulted favourably, and that I have obtained the active principle of the mustard which is combined with a volatile acrid oil, a full description of which will be given in the second edition of my *Essays on the Materia Medica*. This peculiar principle I have denominated Sinapine, in conformity to the usual nomenclature of vege-

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table proximate principles. It bears the same relation to Mustard that piperine does to pepper, and like it is united with an acrid oil, and is otherwise analogous to piperine in its chemical properties, in not forming salts with acids, &c. &c. This principle differs essentially from the volatile oil obtained by distillation, being much more active and in every respect a far superior article, and will entirely answer all the purposes of the mustard plaster as a rubefacient; it is simply to be applied to the skin, and in a few hours all the effects of the mustard plaster will be experienced, and vesication may be produced by a second application of the oil. To the country practitioner the advantages of this oil are almost incalculable. It is extremely inconvenient for the country practitioner to carry the mustard with him, as its virtues are deteriorated, and in a short time rendered inert, if not kept in a close bottle, so that they seldom if ever carry the article with them, and they are thus frequently deprived of the usefulness of sinapisms so important in some cases as to be essential to the life of the patient. This oil is so concentrated a preparation that a small vial will be sufficient for several applications, and which can be conveniently carried with the medicines usually taken by the physician. Its action will always be uniform, and not subject to deteriorate in any length of time. It will certainly be a valuable substitute for the crude mustard as a rubefacient, and I hope will prove a valuable addition to the *Materia Medica*.

It is manufactured and for sale only at

GEORGE W. CARPENTER'S Chemical Warehouse,
301 Market street, Philadelphia.

CARPENTER'S SARATOGA POWDERS,

FOR MAKING

CONGRESS SPRING OR SARATOGA WATERS, .

Equal to those fresh from the Springs.

These powders are much superior to the Seidlitz, being equally aperient and more agreeable, and at the same time possessing valuable tonic and chalybeate qualities.

It is now scarcely two years since the introduction of these powders, in which time they have been sent to every populated section of the United States, and have given in all places the highest degree of satisfaction; they are now extensively used throughout the southern states, where they are highly appreciated by the faculty, and extensively employed by the most distinguished physicians. They have elicited from the professors of several medical institutions and from highly distinguished individuals in various places, voluntary acknowledgments of high commendation on their valuable properties. The reputation and demand which Carpenter's Saratoga powders have acquired will no doubt be an inducement for the ignorant to attempt their preparation. The proprietor has already received frequent complaints that spurious and inferior imitations have been made, and that sales have been effected on the reputation and character of his preparation. He deems it justice to the community to apprise them of these facts, that they may be on their guard. They should be particularly to specify in their orders, Carpenter's Saratoga powders, otherwise they may get another article; and the same remarks will apply to the Extract of Sarsaparilla, Compound Tonic Extract, and several other preparations.

We are pleased to find that the imitation powders are not patronized by the faculty; but are objected to wherever they are known. In some cases, however, they are purchased by individuals who are not acquainted with the circumstances.

